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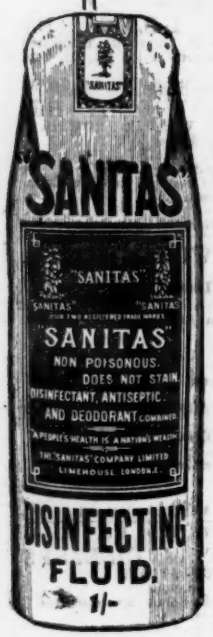

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A Lecture
ON
BIRTH PALSY: SUBLUXATION OF THE SHOULDER-JOINT IN INFANTS AND YOUNG CHILDREN.

Delivered at the Hospital for Sick Children, Great Ormond-street, on March 4th, 1913, as one of an Advanced Course of Lectures arranged by the University of London,

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GENTLEMEN,—I have chosen the subject of birth palsy for my lecture this afternoon because the treatment of this condition does not appear to me to be adequately dealt with in text-books, and also because one result of this paralysis—namely, subluxation of the shoulder-joint—has received little or no attention in this country. My remarks will be based largely on a personal experience of cases seen during the last few years, of 40 of which I have notes. I should like to say now how greatly I am indebted to my colleagues at this hospital; without their generous coöperation it would have been impossible for me to examine and treat so many as 35 cases in the last three years or so.

BIRTH PALSY.

Birth palsy—i.e., palsy produced during and dating from birth—is due, as you know, to injury to the brachial plexus or the nerves passing to form it. It is now generally accepted that the damage is brought about by traction on the nerves, which are thereby partially or completely torn. This traction is produced during labour by forcible deviation of the head and neck away from one shoulder which is temporarily fixed. It is easy to see how such a condition can occur during a forceps delivery when one shoulder is hitched above the brim of the pelvis or in a breech presentation when the after-coming head is born with difficulty. The view that compression by the clavicle produced the damage has been disproved by experiments on the cadaver (Clarke, Taylor, and Prout [1]) and by observations on the situation of the lesion, which is usually well above the level of the clavicle, during the course of operations upon the plexus. It is stated that the paralysis occurs equally (Tubby [2]) or nearly equally (Sherren [3]) in head and breech presentations. My series of cases does not bear this out, since in 32 the vertex had presented, only 7 were breech cases, while one was turned and delivered by forceps. In support of these figures, small though they are from which to draw conclusions, I might point out that though the first five cases do not represent nearly all the cases seen at that time, the last 35 include practically all the patients examined during the last three years or so and diagnosed as birth palsy, and therefore can be regarded as a consecutive series. As a rule, this lesion only follows difficult labour, whether the vertex or breech presents, but in rare cases labour has been easy and normal. In most of the vertex cases forceps were used. Further details of the history of parturition obtained in this series will be given in the latter part of the lecture.

Nature of Lesions.

The actual damage to the nerve varies from slight tearing of the perineural sheath and hæmorrhage into the nerve itself, to complete tearing through of the nerve trunk. The milder types of damage are by far the more common, for it is a well-established fact, only disputed by one or two (Bruns [4]), that in the majority complete recovery ensues. The exact distance from the cord that the nerve yields seems to vary. The anterior primary division of one or more nerves may be actually pulled out, more or less completely, from the spinal cord, which naturally also suffers. Much more commonly the nerves or trunks of the plexus are torn, while Kennedy [5] found the commonest seat of all to be at the point of junction of the fifth and sixth cervical roots to form the upper trunk of the plexus. I would refer you to a paper read by G. F. Boyer [6] in the Neurological Section of the Royal Society of Medicine last year, in which he gives a detailed account of the condition of the plexus, cord, and brain in a case of obstetric paralysis, a female who died at the age of 41. The traction to which the plexus had been subjected at birth had nearly succeeded in pulling all the component nerves out by their roots, the origin of the seventh cervical nerve from the cord being the point of greatest damage. Boyer found the opposite side of the cord distorted and otherwise altered by the injury and resulting fibrotic changes. He expresses the view that in severe and persistent cases of paralysis resulting from obstetric trauma the probability is that the cord is injured much more frequently than is generally considered. Burr [7] in 1892 expressed a similar view. However true this view may be, there is no doubt that the lesion usually consists of a partial tearing of one or more nerve trunks some distance from the spinal cord, and that the damage stops short of complete division.

It follows from the mode of production of the damage in these cases that the upper part of the plexus—i.e., the most obliquely running nerves—will suffer most, and this is undoubtedly the case. In the vast majority the paralysis is of the upper arm or Erb-Duchenne type; sometimes the whole plexus is affected, while very rarely only the lowest trunks are damaged, giving rise to the lower arm (Klumpke) type of paralysis with involvement of the cervical sympathetic. The latter would result from forcible traction on the shoulder in the upward direction. In a typical case the nerves that suffer are the fifth and sixth cervical. In rarer cases the seventh cervical is damaged in addition, while, as already stated, occasionally the whole plexus is damaged. It is a disputed point as to whether 6 C. is necessarily damaged or not in a case showing the typical paralysis. Harris and Low [8] maintain that division of 5 C. alone can produce the characteristic paralysis. It must always be remembered in connexion with the brachial plexus that it is subject to considerable variation. It may be pre-fixed or post-fixed, and the exact distribution of a particular spinal nerve can only be determined with accuracy by direct stimulation of the nerve in the course of a surgical operation. I am inclined to regard 6 C. as a sort of odd-job nerve, since clinically it is often, if not usually, impossible to distinguish between a lesion of 5 C. alone and one of 5 and 6 C. together. 5 C. often provides the sole, or practically the sole nerve-supply to certain muscles, whereas this is not the case with 6 C.

As to the lesions I have myself observed in the course of operations on the brachial plexus in five cases, in one (Case 5) which presented the typical paralysis, the 5 C. alone was scarred and surrounded by fibrous tissue just at the outer border of the scalenus anticus. The phrenic nerve was involved in the scar tissue: 6 C. was normal in appearance, and direct stimulation produced vigorous contraction of the pectoral and of some muscles in the forearm, but it was not considered advisable to disarrange the sterilised towels sufficiently to make further investigations. Stimulation of 5 C. produced contraction, definite but not vigorous, of the deltoid, particularly the anterior part, the biceps and the supinator longus, and the infraspinatus almost certainly. Contraction of the supraspinatus was uncertain. The fifth cervical and phrenic nerves were freed from all scar tissue, and the sheath of the former was incised longitudinally. In doing this one definite constricting band was divided. Cargile membrane was wrapped round the nerve before the wound was closed. The child was 10 months of age when operated upon and presented the typical vertically hanging arm, with the usual muscles still almost completely paralysed. These muscles responded so feebly to the faradic current that in several the response was uncertain. Paralysis of one side of the diaphragm was not looked for before operation, but soon after no sign of this could be made out.

Case 2, an infant of 8 months, was seen in 1906 before I had realised the frequent occurrence of subluxation, but limitation of external rotation at the shoulder was noted. No response to faradism could be obtained in the spinati and supinator longus, and only very feeble response in the deltoid, biceps, and extensors and flexors of the wrist and fingers. The triceps and serratus responded briskly. At the operation the whole plexus was found to be involved in one sheet of scar tissue. I had the greatest difficulty in reaching

normal nerve trunks above and below, which were then traced through the scar tissue. After clearing 5 and 6 C. and their connexions and terminal nerves, 7 C. was cleared partially, when a minute puncture was made in the pleura which was adherent to it, so I had to close the wound rapidly after wiring the clavicle, which had been divided in order to allow of healthy nerves being reached below. Stimulation of the suprascapular nerve produced good contraction of the supraspinatus. Stimulation of all the trunks cleared (5, 6, 7 C.) gave vigorous contraction of the pectoral. No definite response was observed in the deltoid. Time prevented me from making a complete investigation of the response to stimulation of the individual nerves. No ill-effects resulted from the operation.

Case 3, referred to me by my colleague, Dr. J. H. Thursfield, was only operated upon after long and careful consultation, but in the light of later experience I rather doubt whether it was really a true birth palsy. Both arms were affected, the elbows and shoulders both being very rigid. I am inclined to regard this as having resulted from faulty development rather than from injury to the plexus. [I have here a photograph of a similar case. The paralysis (or absence of muscles) was extensive. Faradism produced response in both arms in the triceps, pectorals, and flexors of the fingers. All the other muscles gave no response. Skiagrams of the shoulders and elbows threw no light on the case.] On the left side the plexus appeared normal, but stimulation of 5 and 6 C. produced no response. 5 and 6 C. were divided at their junction and inserted in a slit in 7 C. If damaged these nerves must have been torn very close to the cord. On the right side the plexus was again found to be normal, but stimulation of the nerves did produce feeble response in the appropriate muscles, so nothing further was done.

In *Case 4*, aged 9 months, the usual group of muscles failed to give any response to faradism. Exposure of the plexus revealed nothing obviously abnormal except that 5 and 6 C. were possibly a trifle more difficult to dissect out than normally. In this case the lesion must have been at the origin of the nerves from the cord. Direct stimulation of 5 C. and also of 6 C. produced no result, except extension of the wrist. This distribution has been noted by Harris and Low,[9] who have stated that the radial extensors are sometimes supplied by 5 C. 7 C. seemed normal in every way. Thinking that 7 C. might be able to do the work of 5 C. as well as its own, but not the work of 5, 6, and 7 C., and regarding 6 C. as comparatively unimportant, I grafted the distal cut end of 5 C. into a transverse slit in 7 C.

In the remaining case (*Case 1*) no response to faradism could be obtained in the deltoid, spinati, and supinator longus, but a feeble response was found in the biceps. The extensors of the wrist and fingers responded feebly and the other muscles normally. The child was a year old. I found 5 and 6 C. torn across, apparently completely, at their junction. After dissecting out a large bulbous mass involving the distal fused ends, nothing could at first be seen of the proximal ends. By deep dissection between the scaleni muscles the proximal ends of 5 and 6 C. were found separately, and devoid of all bulbous swelling. Direct stimulation of the distal end was marred by diffusion of the current which was too strong, but I was able to make out that the deltoid did not contract, the biceps almost certainly did, and the supinator longus almost certainly did not. This finding, coupled with the fact that the biceps showed some response to stimuli before operation, made it certain that there must have been some fibrils passing on from 5 C. or 5 and 6 C. to the bulbous common trunk, though dissection suggested complete division. The two nerves above and the conjoint trunk below were pared and secondary suture performed, the head and shoulder being approximated and retained in this position for two weeks.

Physical Signs.

At or within a few days of birth the affected arm is noticed to hang motionless from the shoulder. It hangs vertically, the elbow being fully extended, the forearm pronated, and the whole arm rotated in at the shoulder, so that the palm looks outwards. This is the characteristic attitude, so well known to you all. The arm may be limp or rigid. If rigid it is due to voluntary contraction of the unparalysed muscles, particularly the pectoral and the triceps, the child's effort to avoid being hurt, and this irritability is said to indicate neuritis resulting from tearing of the damaged nerves and to be an unfavourable sign. I doubt whether this is to be relied upon, as a fretful infant will resist movement of either arm, and a little patience will enable the joints of the affected arm to be moved freely. Some pain and tenderness in the neck are, however, only what might be expected in the first days of life. In some cases it is more than probable that the shoulder-joint has been strained during birth as well as the plexus, and that this accounts for the rigidity. The occasional occurrence of adhesions in the joint (*vide infra*) supports this supposition.

In 1903 I saw an infant of 7 weeks who held his head over towards the left shoulder. The mother gave a history that the left arm had hung limp after birth, and was kept in a sling for a week and then seemed all right. It seems probable that the position of the head had been assumed to relax a slightly damaged plexus and had become habitual. It is of interest to note that there was a hæmatoma of the sterno-mastoid on the opposite side of the neck in this case. In another case (aged 5 weeks) the hæmatoma and the damaged plexus were on the same side of the neck.

The fingers are usually clenched. It is not long before obvious wasting of the limb with flattening of the shoulder appears. The movements of the joint, with the exceptions mentioned above, are at first free, but later contracture of the healthy muscles ensues. Almost invariably after a few weeks there is limitation of external rotation at the shoulder-joint. Less commonly supination is limited, and still less commonly passive flexion of the elbow is incomplete, and sometimes both flexion and extension are limited after some months. The muscles paralysed are the deltoid, spinati, biceps, brachialis anticus and supinators, and occasionally the radial extensors of the wrist. In the rarer cases with extensive lesions of the plexus the paralysis is, of course, more widespread. In the typical cases no sensory disturbance can be made out. The diagnosis is usually easy enough, but errors are sometimes made in the direction of overlooking the paralysis and attributing the immobility of the arm to a fracture of the clavicle or to a dislocated shoulder, which is forthwith reduced.

As to the course of the case, all writers are agreed, with the exception of Bruns, that spontaneous recovery occurs with more or less rapidity in most cases. Only in exceptional cases is the paralysis of any or all of the muscles at first affected permanent. In this series of cases the nerves appeared to have completely recovered, or show every sign of recovering at the present time, in at least 60 per cent. In several of the remaining 40 per cent. the residual paralysis affected one or more muscles of the forearm only, the bulk of the paralysis having entirely recovered. Wrist-drop being a feature of several, it is possible that the persistence of this might be attributed to inefficient treatment. One of the points I want to lay particular stress upon, and of which I shall have a good deal to say presently, is the superventionof a posterior subluxation of the shoulder-joint as a late result of the paralysis in these cases. It is my belief that those cases, in which the nerves recover in the usual, more or less, rapid manner, almost invariably develop this deformity, which constitutes the only hindrance to the complete recovery of the muscles and the movements of the arm. Excluding three cases seen before this point was appreciated, 28 out of the remaining 37 cases showed this deformity to a greater or less degree. This deformity can, and should, be avoided.

Electrical examination of the muscles in the youngest infants is not advisable, but this may be done at, or even before, the end of the second month, the use of an anæsthetic being essential. But by this time the case will probably show definite signs of recovery, so as to render electrical examination unnecessary. In the worst cases the paralysed muscles fail to respond to faradic currents, and later the presence of the reaction of degeneration may be noted. In cases not seen till the subluxation of the shoulder has occurred testing of the muscles is often necessary to confirm the supposed condition of the muscles as gleaned from an ordinary examination. It must be remembered that in a fat baby failure of a muscle to respond to faradism may not be proof that that muscle is completely paralysed. As pointed out by Kennedy,[10] stimulation by means of an electrode thrust through the skin into the substance of the muscle may produce a contraction unprovoked by the usual terminal placed on the skin over the muscle. I have myself obtained

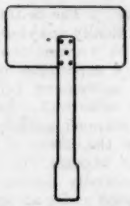
contraction in muscles by direct stimulation of a nerve during the course of an operation, when these muscles failed to give any response when tested in the usual way. It is also particularly difficult in fat children to test the individual muscles of the forearm; the common extensor of the fingers has, to me, been particularly troublesome.

Treatment.

Books give us very little assistance on this matter. If it is mentioned at all the only advice given is to put the arm in a sling and order massage and electricity. Sherren[11] says: "In the usual type of birth paralysis (Erb-Duchenne) the limb should be bandaged to the side over cotton-wool and the elbow supported, and should be taken down for massage, passive movements daily, and this treatment continued until muscular recovery ensues, or the occurrence of the reaction of degeneration in the affected muscles renders an operation advisable." The prevention of deformity is altogether ignored. There is no reason why the principles which guide us in the treatment of paralysis in general should not be more efficiently carried out in these cases. Relaxation of the paralysed muscles is the keynote of treatment; it is, in my opinion, far more important than anything else. Put the joints of a paralysed limb in the correct position and order massage, and nature will do the rest unless the nerve lesion is beyond recall. Electricity may be allowed if the friends desire it.

For some time past I have been using this splint (Fig. 1) for cases of birth paralysis and infantile paralysis of the upper limb. The arm is held abducted to something approaching the right-angle at the shoulder, the elbow is at a right angle, the forearm is supinated, and if desired, and the splint is made long enough, the hand and fingers can be fixed in extension. The splint which I have here is

FIG. 1.



Special splint for birth paralysis and some cases of infantile paralysis of the upper limb.

FIG. 2.

Special splint applied to a case of birth paralysis.

made of tin, and consists of one long straight arm-piece riveted to an oblong, slightly thinner, body piece, in the form of the letter . It is padded and then bent so that the oblong piece lies around the chest on the affected side and the arm-piece makes two abrupt curves at a right-angle (Fig. 2). Webbing straps and buckles are attached to keep the splint in place. It will be noticed that one long strap passes from the upper posterior angle of the body-piece, across the back and round the front of the opposite shoulder, over a layer of cotton-wool, to return to the point on the splint from which it started. This prevents the whole splint from slipping round to the front and allowing the elbow to come forward. If posterior displacement of the head of the humerus is to be avoided the elbow must be kept back in line with the shoulders.

This splint is taken off at least twice daily for massage of the whole arm and shoulder and passive movements of all the joints. The movements that must be particularly performed are those which we know are likely to become limited—i.e., external rotation of the humerus, full flexion of the elbow, and supination of the forearm. It is also useful to carry the elbow back with the arm abducted and externally rotated—i.e., an accentuation of the position in which it is held in the splint, so as to force the head of the humerus forwards and prevent contraction of the anterior part of the capsule and the subscapularis. Electricity is inadvisable in young children and also entirely unnecessary. After a few weeks, if the muscles have shown signs of rapid recovery, the splint may be removed for a portion of the day and the child encouraged to move the arm. In older children the opposite limb may be put inside the clothes with this object in view. Later the splint need only be worn at night. In a favourable case, efficiently treated from birth, about three months should see the paralysis cured, but even then it is as well to manipulate the joints to be sure of avoiding contracture. If after three months' careful treatment there is no sign of recovery, the muscles should be tested electrically under an anæsthetic, and if they do not respond to faradism operation upon the plexus is advisable. This depends, of course, upon the condition that the case has been carefully treated, and not only upon the fact that the child is three months old and is still paralysed. Some surgeons would recommend much longer delay before an operation is undertaken.

Time will not permit me to enter fully into the subject of operation; I must content myself with a few remarks. If subluxation of the shoulder is present, this, as suggested by Whitman, should be dealt with before the operation upon the plexus is performed. I prefer a transverse collar incision. The exposure of the plexus is usually extremely easy, and the smaller branches, such as the twig to the subclavius muscle, are much more easily seen than in the dissecting-room subject. Each case must be treated on its merits. Undoubtedly the best thing, if the case lends itself to such treatment, is to do as Kennedy recommends and excise the damaged portion of nerve and suture the ends together. Unfortunately, to find a condition, on exposure of the plexus, suitable for such treatment is the exception rather than the rule, as the few cases I have detailed bear out. When the damage is extensive all the scar tissue surrounding the nerves should be removed, and the sheaths of the nerves should be incised longitudinally to relieve compression. Exactly who originated this latter procedure I have failed to find out. When the damage is close to the spinal cord and beyond the reach of the surgeon, nerve anastomosis is the only resort, and the outlook is extremely poor. The implantation of a divided nerve into the side of an adjacent healthy nerve has not given satisfactory results in the half dozen instances in which I have tried it. In the two cases of birth palsy in which this method was adopted, so far as I know the result has been conspicuous by its absence.

SUBLUXATION OF SHOULDER-JOINT ASSOCIATED WITH BIRTH PALSY.

While a great deal has been written on the treatment of injuries of the nerves during birth, but little attention has been paid to the deformities resulting from those nerve lesions. Reference to works on nervous diseases, children's diseases, &c., will fail to show any but the most meagre description of deformity of the shoulder-joint associated with birth palsy, and many books fail to refer to it at all. As I have already stated, the directions for aiding the recovery of the paralysed muscles are vague and entirely disregard the avoidance of deformity. During the last three years I have met with a large number of cases in infants and children of posterior subluxation of the shoulder-joints, all of which, with one possible exception, seemed to me to have resulted from antecedent paralysis caused by injury to the brachial plexus at birth. Royal Whitman[12] drew attention to this subject in a paper in the *Annals of Surgery* in 1905. He agrees with some other writers in classifying dislocations of the shoulder in young children under three heads: (1) true congenital dislocation; (2) traumatic dislocation resulting directly from injury at birth; and (3) dislocation, or rather subluxation following on birth palsy. He considers the first two varieties as of rare occurrence, the majority of the cases falling into the third group. This paper of Whitman seems to have received less attention than it deserved, for this deformity seems to be extremely common.

In all typical cases of birth palsy, excepting those in which the injury is slight and recovery rapid, and also those in which the plexus has suffered severely and the paralysis continues, at least a tendency to posterior displacement of the head of the humerus would seem to be invariably present. As already stated, 28 out of 37 cases showed, more or less, a posterior displacement of the head of the humerus. Of the other 9 cases, 4 required operation upon the plexus because of the persistence of the paralysis, while another case had very extensive paralysis and was, unfortunately, lost sight of. Search in medical literature is of no help in forming an estimate of the relative frequency of these varieties of dislocation, for precisely similar cases are found

described by different observers under different headings but a careful study of reported cases seems to justify the conclusion that, though many are described as congenital, almost all belong to the class now being described. An endeavour will be made with the help of 28 cases observed by the author to support the ideas of Whitman. A brief description of a typical example will make it clear exactly what is believed to be the sequence of events in these cases.

A Typical Case.

A child is born after difficult labour, and one arm is immediately noticed to hang vertically from the shoulder and to be limp and useless. The limb hangs in the position regarded as typical of a lesion of the upper part of the plexus and already described fully in the early part of this lecture. Further examination shows that the muscles paralysed are the supraspinatus, the infraspinatus, deltoid, biceps, brachialis anticus, and the supinators. The lesion consists in a partial tear of 5 C. or 5 and 6 C. The case is treated by bandaging the arm to the side, or putting the forearm in a sling. In the course of a few weeks or months the damaged nerves recover, and as a result the paralysis disappears, but the movements of the arm still remain far from perfect. The arm will now be found to have assumed a new position (Fig. 4); it no longer hangs vertically close to the body with the palm turned outwards. The upper arm is slightly flexed and abducted, the elbow is usually at or a little below the right angle, the pronated forearm passing slightly downwards and inwards across the front of the body. Examination will show that active and passive movements at the shoulder-joint are limited, with the exception of flexion and internal rotation. Abduction is checked before the arm reaches the horizontal position, extension is usually impossible, while external rotation is the most markedly limited. It is often impossible, after placing the elbow to the side, to rotate out the humerus sufficiently to bring the forearm into the directly forward position. On adducting the arm to the side the scapula tilts upwards—i.e., the arm is fixed in slight abduction. Flexion of the elbow is slightly limited, and while passive supination is, as a rule, free, active supination is imperfect, while in older children both may be impaired. Active supination is hindered largely by the impossibility of rotating out the humerus. There is flattening of the shoulder-joint and general wasting of the arm from disuse. As might be expected, the bones of the arm, particularly the humerus, and including the scapula and clavicle, are slightly smaller than those on the opposite side. The front of the shoulder is flattened, while the normal hollow below the angle of the acromion at the back of the joint is replaced by a swelling which is readily felt to be caused by the backwardly displaced head of the humerus. This is well seen in these photographs. (Figs. 6, 7, and 8.) In fat infants manual examination is necessary to reveal this displacement. The head of the humerus is, therefore, in a position approximating to that present in a subspinous dislocation of the shoulder, and the position of the arm is the same in the two cases. Skiagrams of the two shoulders show that the humerus on the affected side is smaller and shorter than its fellow, and that the upper extremity is less advanced in ossification, and lies at a lower level in relation to the scapula than the one on the other side. (Figs. 3 and 5.) The limitation of movement of the arm is sufficient to seriously interfere with the use of the hand, and the disability is not lessened as it might be by use since the other hand is used whenever possible. The hand cannot be thrust forwards palm upwards to receive anything. I have known a boy learn to write with his left hand because of the condition of the right, though he learnt to write with the right after the subluxation of the shoulder had been corrected.

How the Subluxation is Brought About.

Anatomically there is no doubt about the subluxation. The head of the humerus looks directly backwards, and its anterior part rests upon the posterior margin of the glenoid cavity. How is this displacement brought about? At first the arm hangs vertically in a position of extreme internal rotation. Before the external rotators of the humerus—the spinati, posterior part of deltoid, and teres minor—have recovered sufficiently to move the arm, the internal rotators have become shortened, so that the former cannot possibly recover completely. The muscle which is most affected and offers the strongest bar to outward rotation is the subscapularis. This I have proved over and over again during the course of operations. It is associated with a secondary shortening of the anterior part of the joint capsule. The diminished support at the back of the joint, owing to the paralysis of the spinati, teres minor, and posterior part of the deltoid (Tubby), favours backward displacement of the head of the humerus, which is pulled back by the unparalysed teres major and latissimus, and, most important of all, the subscapularis. It seems possible that the slight flexion of the joint and also in part the subluxation of the head of the humerus may be explained by supposing that the insertion of the subscapularis acts as the fixed point from which the bone is flexed by the pectoral, and later also by the recovered anterior part of the deltoid, and that the head of the humerus, instead of being the centre of this movement, is itself tilted backwards. The slightly lowered position of the head of the humerus is explained by the loss of support of the deltoid, and also by the pull of the upward running fibres of the teres major and latissimus.

It might be said, How is it that the subscapularis is contractured when it is supplied by 5 and 6 C., the very nerves usually paralysed? The answer is that recovery of the nerves has taken place before this deformity has occurred, or at any rate become fixed, and in cases in which the paralysis is permanent the subluxation does not occur. For it is, I think, a truth, though one I have never seen stated, that a completely paralysed muscle cannot become shortened, and, *vice versâ*, contracture of a muscle is proof that at least some healthy fibres exist in it. Whitman has apparently seen cases of subluxation with a paralysed deltoid and other muscles. If such a case were due to a lesion of 5 C. only there would still be the subscapularis fibres supplied by 6 C. capable of shortening, while it must be remembered that the plexus is subject to considerable variation. In "Quain's Anatomy" the subscapularis is said to receive its nerve-supply usually from 5 and 6 C., but occasionally from 5 C. alone, from 6 C. alone, or from 5, 6, and 7 C.

Whitman in writing of these cases says: "The deltoid is completely atrophied, and there is practically ankylosis at the articulation." Adhesions sufficient to warrant the description of fibrous ankylosis are in my experience quite exceptional, though the limitation of movement is undoubtedly in some cases due in part to adhesions. In an infant aged 5 months some adhesions snapped audibly on gently rotating out the humerus to test the extent of this movement. Voluntary fixation is common enough, but even in the cases where the movements are markedly limited the range of movement is considerably increased under an anæsthetic, and never have I met with ankylosis. In the youngest infants there may be tenderness about the joint, and I have seen swelling suggestive of an epiphysitis of the upper end of the humerus in a child suffering from birth palsy and apparently perfectly healthy otherwise. It is, of course, possible for traumatic dislocation of the joint and injury to the plexus to result together from the same

DESCRIPTION OF ILLUSTRATIONS.

FIG. 3.—CASE 8.—Radiogram of right shoulder-joint, subluxated. Compare with Fig. 5. Note the right humerus is shorter and slighter, ossification is less advanced, and the whole base lies at a lower level in relation to the scapula.

FIG. 4.—CASE 8.—Girl, aged 5 months, with posterior subluxation of right shoulder-joint, the result of birth paralysis. The nerve lesion has recovered. Recovery of previously paralysed muscles still imperfect owing to the limitation of movement at the shoulder.

FIG. 5.—CASE 8.—Radiogram of left shoulder-joint, normal.

FIG. 6.—CASE 2.—Boy, aged 10 years, with posterior subluxation of left shoulder, partially reducible. Paresis of common extensor of fingers. Note prominence formed by displaced head of humerus. Head of radius displaced forwards and outwards. Scapula is slightly smaller than the other.

FIG. 7.—CASE 2.—From the front. Note the prominence of the coracoid process and the absence of the usual rounded swelling caused by the upper end of the humerus.

FIG. 8.—CASE 4.—Girl, aged 9 years. Subluxation of right shoulder. Note prominence of head of humerus at back of joint. Nerve lesion has recovered.

FIG. 9.—CASE 2.—From behind, two years after reduction of the subluxation by open operation. Compare with Fig. 7.

FIG. 10.—CASE 2.—From the front, after reduction by open operation. Compare with Fig. 7.

FIG. 11.—CASE 4.—Arm fixed in plaster after operation.

FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

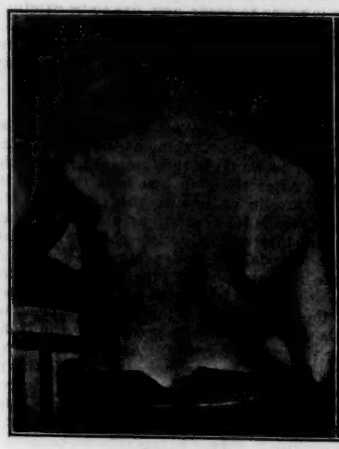


FIG. 7.

FIG. 8.

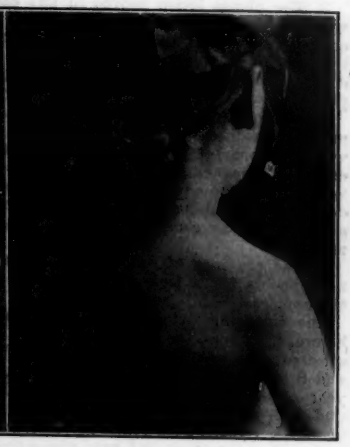


FIG. 9.

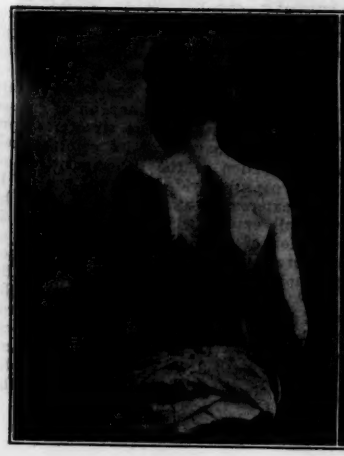


FIG. 10.

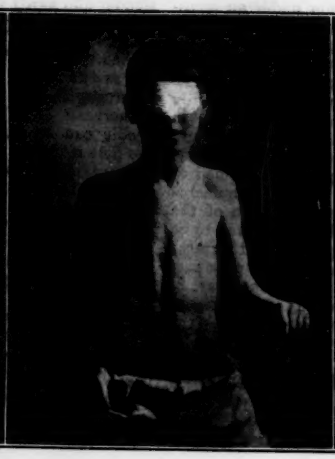


FIG. 11.

traumatism at birth, but I believe the cases in this series to be all cases of subluxation secondary to paralysis. There is one possible exception, a child with double congenital talipes with very deficient musculature of the legs, double congenital drop-wrist and claw hand, and a left posterior subluxation of the shoulder. The shoulder condition agreed in every way with what was found in the other members of this series, and labour had been extremely difficult, but the association of the other deformities, undoubtedly of congenital origin, must throw some doubt on the case.

I will now give the grounds upon which I base my belief that in all the other cases in this series (28) a birth palsy has preceded and caused the subluxation.

1. A history of difficult labour. Of 23 in which the head presented, 21 are said to have been definitely difficult, and in 15 of these forceps were used. In 1 the arm was broken, in 2 the arm was over the head, and in 1 the face presented and the arm was over the head. Of the 5 breech presentations 3 were difficult. The clavicle was broken in one, in another the arms were extended, while in a third there was a contracted pelvis. In many the child was absolutely black at birth. In almost every case, therefore, labour was difficult, and damage to the plexus more than possible.

2. A history of paralysis after birth. In 23 out of the 28 the arm is said to have hung limp and vertical at first—i.e., to have been in the position seen in birth paralysis. In one the arm was behind the back. Six cases were actually seen soon after birth by one of my colleagues or myself and diagnosed as birth palsy. Another was certainly diagnosed at birth as a dislocation by the medical attendant, yet the arm hung limp from the shoulder, so it is likely that he was mistaken.

3. The plexus lesion proved in one case. In a case in which I operated upon the plexus, some time before I discovered the subluxation, the plexus was obscured throughout by a mass of fibrous tissue. This does not, of course, entirely discount the possibility of the dislocation and the plexus lesion having resulted from the same injury.

4. The presence in the series of all degrees of displacement of the head of the humerus; and at the same time while in some of the younger ones the subluxation was completely reducible, in the older cases the displacement was fixed. It was possible in the series to trace the gradual development and fixation of the displacement. In 5 the subluxation was completely reducible, and in 5 partially reducible.

5. The presence of some residual paralysis which could not possibly result from pressure of the displaced head of the humerus.

The following details of the series may be of interest before I pass on to the treatment. The two arms were affected in an equal number of cases. There were 20 males and 8 females. Half of the cases—i.e., 14—were under 1 year of age; between 1 and 2 years there were 5 cases; under 3 years, 2 cases; exactly 3 years, 1 case; 6 years, 1; 7 years, 2; 9 years, 10 years, and 11 years, each 1. The earliest age at which I have seen a reducible subluxation is 2 months and an irreducible subluxation 4 months. In 18 no sign of paralysis could be detected, and in most cases this was verified by electrical examination under an anæsthetic. Of the 10 remaining cases 7 showed some weakness of the extensor muscles on the back of the forearm, the common extensor of the fingers being the muscle most often affected. It is noteworthy how difficult it is to stimulate this muscle by an electrode, even in a case where it is certainly healthy. In one (Case 13) no response was obtained in the supinator longus, nor in the extensors of the wrist and fingers, but the child was very fat. Passive supination was not limited. The distribution of the paralysis seemed to correspond to the musculo-spiral nerve, and as the humerus had been broken at birth a little below the centre of the shaft the nerve was exposed in the arm, but was found to be normal. In another case (No. 26) the supinator and serratus magnus were paralysed, while the response of the upper part of the pectoralis major was doubtful (? 6 C.). In one (Case 2) there was a dislocation forwards and outwards of the head of the radius, apparently congenital, on the same side as the subluxation. One developed tubercular disease of a metacarpal bone, but the history was typical of a birth paralysis, and there was no sign, skiagraphic or otherwise, of tubercle of the shoulder.

Treatment.

This consists in reduction of the subluxation and retention of the limb in some form of apparatus for a sufficient time to allow the stretched tissues, capsule and muscles, at the back of the joint to contract and recover their normal condition. This period of fixation is followed by massage and exercises, passive and active, for an indefinite period.

As already stated, in 5 complete reduction was possible; these were all treated on the splint that I have shown you, together with massage and exercises. Reduction is brought about simply by external rotation of the humerus; therefore. this movement, and external rotation combined with extension with the arm at a right-angle to the trunk, must be the chief passive manipulation performed by the mother.

Of the remaining cases, in 5 an attempt was made to reduce the subluxation by manipulation under an anæsthetic, as practised and recommended by Whitman.[13] The elbow is carried backwards, the arm being at a right-angle to the chest, while a thumb is placed behind the head of the humerus to act as a fulcrum. When reduction is accomplished and the tissues in front are thoroughly stretched, external rotation is gradually obtained and then full adduction. It is not always possible to obtain complete reduction at the first sitting. In one case I manipulated the shoulder on three occasions, in two cases twice, and in two once, but without satisfaction. Not once did I obtain sufficiently free external rotation, though the head could be placed in the glenoid cavity. Although I am accustomed to using considerable force in the reduction of congenital dislocations of the hip-joint, I never dared use sufficient rotary force to overcome all the muscular contracture for fear of twisting off one or other epiphysis of the humerus. In every one of these cases an open operation was eventually performed. Whitman admits that relapse is prone to occur and has to be carefully guarded against. By the open method I am about to describe this tendency to relapse is very greatly diminished if not entirely done away with. In all, 18 cases have been treated by open operation.

Operation.

The joint is reached through the usual anterior incision for excision of the shoulder, commencing at the clavicle and passing downwards and outwards in the interval between the deltoid and pectoral. After the skin has been excluded by clamping a sheet of muslin or lint to the margin of the incision, the cephalic vein is found and, as a rule, clamped above and below, the intervening portion being removed. The interval between the deltoid and pectoral is opened up and the muscles are retracted. The inner margin of the deltoid, close to its origin, may be divided for a short distance if the exposure of the deeper parts is inadequate. The long head of the biceps is then defined in its groove, the arm being rotated out to bring the groove forward. As a rule the upper margin of the flat pectoral tendon is nicked to enable this to be more easily done. The capsule is now incised in the line of the tendon as it passes inwards just above the tuberosities and the tendon exposed. The preliminary exposure of this tendon lower in the groove is simply to facilitate this exposure higher up. A bridge of tissue is left between the tuberosities to retain the tendon in its groove. The tendon is usually slender and easily damaged. All the capsule lying in front of and below the tendon is now divided, including the tendon of the subscapularis muscle which is closely connected with it. The arm should be forcibly rotated out by an assistant. If this tendon is cut close to the lesser tuberosity there is no danger of wounding the large vessels or nerves. If it is thought to be necessary, an aneurysm needle can be passed down beneath these structures from the hole made in the capsule above, and its point pushed forwards just below the tendon of the subscapularis, and then this muscle and the capsule divided upon the needle. It will now be found that external rotation is free and can be accomplished to the full extent, while this movement is accompanied by reduction of the dislocation. The head of the humerus rotates forwards and its cartilaginous surface is seen through the hole in the front of the joint. By redislocating the head and retracting the margins of the capsule a fair view of the glenoid cavity can be obtained. Adduction will still be imperfect, so the coraco-humeral ligament, which can be shown to be definitely tight, and also the supraspinatus are divided on an aneurysm needle passed beneath them to avoid chipping the head of the

humerus. Sometimes the anterior fibres of the infraspinatus are probably divided before satisfactory adduction is obtained. The only vessel likely to give any trouble is the anterior circumflex. The deltoid and pectoral are brought together with a continuous catgut suture and the wound closed with a subcuticular thread stitch. The pronators of the forearm, if shortened, should be stretched. In three of my earlier cases the coracoid process seemed to project outwards abnormally and obscure the view, so it was divided temporarily and brought together again at the end of the operation with wire or fishing gut. The glenoid, as is to be expected, is shallower than normal. In a girl of 9 years the glenoid was even convex and a fibro-cartilaginous ridge passed downwards and backwards from it; this was probably an attempt at the formation of a false socket, but its exact extent could not be ascertained.

The arm is put up in the position suggested by Whitman in plaster-of-Paris (Fig. 11). The elbow is put to the side and well back, only a thin layer of wool lying between the arm and chest, the elbow is bent at a right angle, and the forearm is supinated fully and directed well outwards—i.e., the humerus is rotated out fully. I usually put a pad of cotton wool behind the upper end of the humerus and another over the shoulder to keep down the scapula and prevent recurrence of the abduction. The arm is retained in this position for three months, the plaster being renewed when the wound is dressed on the tenth or fourteenth day, and again later if necessary. After removal of the plaster, massage, passive movements, particularly extension of the shoulder, external rotation of the humerus, and supination are persevered in for many months. If only the services of a skilled masseuse can be obtained the result should be excellent. Unfortunately, among hospital patients there are few who can make use of their opportunities for regular massage, so the results I have obtained are not so good as they ought to be. Nevertheless, the results are, in my opinion, sufficiently good to justify amply the operative treatment. In every case treated by open operation the head of the humerus is now in its normal position in relation to the scapula, and the external rotation of the humerus is maintained. (Figs. 9 and 10.) Parents have been satisfied with the advantage to the child resulting from the operation, even in cases that I know could have been much further improved by prolonged and skilled massage, &c. In those few that have received more adequate after-treatment the results are excellent.

It must be remembered that the shoulder joint is probably the very worst joint in which to obtain free mobility in a child. It is well known how readily a child will restore, unaided, perfect movement to a joint after acute arthritis. In the case of the shoulder a young child can do practically anything he wants to without moving the shoulder-joint itself, the scapula being so freely movable. As a result the infant does little or nothing to improve this condition, and, in fact, he hinders the mother's efforts by crying and resisting to the utmost. Nevertheless, the position of the limb after operative reduction enables the child to make much better use of his hand and forearm, the muscles of which are usually healthy.

Finally, it seems to me obvious that massage and exercises are to a large extent wasted on an arm crippled by a subluxation of the shoulder, and that replacement of the head of the humerus in the glenoid cavity must precede all other efforts to restore the function of the limb.

In conclusion, I wish to offer my sincere thanks to the Senate of the University for the honour they have done me in inviting me to deliver this lecture.

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LITERARY INTELLIGENCE. — Messrs. Baillière, Tindall, and Cox announce for immediate publication a new edition of Castellani and Chalmers's "Tropical Medicine." The new edition has been revised up to March, 1913. Some 250 new illustrations have been introduced, and the text has been increased by the addition of about 500 pages. The price, however, remains the same.

A CASE OF ANKYLOSTOMIASIS IN BIRMINGHAM.

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A MINE foreman, aged 42, was sent to me by Sir Havelock Charles on Dec. 12th, 1912, complaining of attacks of fulness with splitting or boring pain in the head which had been troubling him for the last eight months. He had fallen down in these attacks and lost consciousness. For nine years he had been a foreman in a coal-mine in Assam, but returned home in September on this account. On the whole he had enjoyed very good health, with the exception of occasional bouts of malarial fever of the ordinary ague type, but he had had none of these since the hot weather of 1911. Eighteen years ago he was in a mine accident as the result of a fall of coal, but he recovered completely and had had no recent injury. He is married and steady in his habits, taking very little alcohol; he denies syphilis. A year ago he was treated for "hook-worm disease."

On examination he was a well-developed, well-nourished man; complexion dark and pale, but he said he was always pale; his mucous membranes were a good colour; weight, 13 st. (he was 11 st. 6 lb. before leaving India); pulse 72; blood pressure 124; knee-jerks lively; physical signs normal; tongue clean; teeth mostly artificial, no stumps; hæmoglobin 80 per cent.; urine acid, no albumin, no sugar. The ophthalmoscopic appearances were negative, and there was no history of epilepsy. On being further questioned he said the attacks came on generally when he rose suddenly to his feet, but might do so when he was sitting quietly in his chair. As nothing else could be found to account for his symptoms it was suspected that ankylostomiasis might still be present.

On Dec. 11th he was given thymol, 60 gr., divided in two doses, and on examination of the stool passed subsequently a male and a female ankylostomum (Ankylostoma duodenale Dubini) were found together with numerous ova. There were traces of blood in the stool. The treatment was repeated on the 27th, when the small smear of fæces sent to me afterwards contained numerous ova but no worms. The thymol was repeated again on Jan. 10th and 24th. As ova were still numerous he was admitted into a bed at the Birmingham General Hospital, placed at my disposal by Sir Robert Simon. The blood, examined by Dr. O. M. Holden, resident medical officer, showed: Red cells, 4,400,000; leucocytes, 7560; hæmoglobin, 80 per cent.; colour index, 88. Differential count of leucocytes: polymorphonuclears, 72; eosinophiles, 6; lymphocytes, 20; and large mononuclears, 1.

The patient said that his head attacks had been less frequent, but as the ova were still abundant the thymol treatment was repeated on Feb. 7th. On the following day one worm was found in the stool, which also contained a little blood. Mr. James F. Brailsford, of the Public Health Laboratory, University of Birmingham, who undertook to examine the stools, subsequently found two more worms, as well as numerous ova of ankylostomum and of trichocephalus. The patient complained that the thymol treatment caused a good deal of burning pain with subsequent depression; his urine was darkened with it. The dose of thymol on the last three occasions had been increased to 90 gr. On account of these disagreeable results it was decided to try oil of chenopodium, recommended by Schueffner as having proved satisfactory in the treatment of this disease in the Dutch East Indies. The dose given was 30 m. in 5 m. capsules—three capsules at 8 A.M. and three more at 10 A.M., preceded and followed by purges as with thymol. It was tried on Feb. 19th and 21st, but no adult worms were found, although numerous embryos and ova were seen. He was allowed to go home after the second dose.

The thymol treament (90 gr.) was continued at home. On March 1st the patient reported that he had had another slight giddy attack. On the 11th he took 120 gr. of thymol; ova and embryos were still present. On the 25th the above treatment was repeated, but the stools on the 27th still contained ova and embryos. On the 31st he was given eucalyptus and chloroform, as recommended by Dr. C. W. Daniels—

eucalyptol 30 m., chloroform 45 m., castor oil 10 drachms, divided into two doses taken at an interval of one hour, and preceded and followed by sodium sulphate as before. He complained of the mixture as very nauseous, and had vomited slightly after the second dose. Three days later he suffered from palpitation, which lasted four days, and when seen by me on April 10th his pulse was 60, but intermitting every fifth or sixth beat. Ova and embryos were still present in the fæces. Whether the cardiac disturbance was the direct effect of the eucalyptus oil or the indirect result of the gastritis set up by the mixture I cannot tell, but in either case I did not think it advisable to repeat it, and have returned to the use of thymol.

Five years ago Professor Ralph Stockman, of Glasgow, published a case of ankylostomiasis in a miner living in the west of Scotland who had been a soldier in India and apparently had been infected in that country. He showed the signs of marked anæmia, his hæmoglobin being only 28 per cent. After three doses of 20 gr. of thymol and a course of Blaud's pills his blood became normal and ova disappeared from the fæces, or their presence was no longer looked for.

The method of administering thymol which has been followed is that recommended by Dock and Bass, the drug being finely powdered with an equal quantity of sugar of milk and given in cachets or capsules; 1 oz. of sodium sulphate is given the previous night, and the same amount two hours after the last dose of thymol. The dose of thymol has varied from 60 to 120 gr. Fasting has also been insisted upon during the day preceding treatment, although the patient has been allowed to drink hot or cold water, soda water, milk and water, bouillon or bovril; and on the second day no food was allowed until after the final dose of sodium sulphate had been taken. The patient was kept in bed until after the bowels had acted in the afternoon of the second day, but he was advised, although not compelled, to stay in bed the whole of that day. I found the patient was generally more or less upset by the thymol; he felt ill, often complained of burning pain behind the sternum, and his urine was dark, so that he was usually content to stay in bed.

Ankylostomiasis is common in Assam, where its prevalence among the coolies on the tea-gardens has made it of considerable economical importance, owing to the reduction of efficiency in the working capacity of affected persons as well as to its by no means inconsiderable mortality. A warm, damp climate like that of Assam is especially favourable to the worms, as the ova require heat and moisture for their development after their escape from the bowel. They hatch and the embryos grow rapidly in warm mud, whence they are readily transferred to the naked feet and legs of Indian coolies. It is now believed that the larvæ gain access to the body by penetrating the skin, and that this is the most usual mode of infection. Penetration of the skin is an affair of minutes only—four minutes according to one estimate (Bass). Looss accidentally infected himself by allowing a drop of a culture of the larvæ to fall on his hand; a few minutes later he felt a lively itching and scraped the surface of the skin, which under the microscope showed a number of empty moults or discarded outer coverings of the embryos; three months later ova were found in his stools.

In answer to my questions the patient assured me that he had never gone about with bare feet or with any part of his body unclothed except his face and hands, but as portions of the mine under his supervision were some miles from his bungalow he was in the habit of taking food in his pocket to eat for lunch, so that it is probable that infection in his case has been by the mouth. It is possible that the skin of his hands might have been infected, but as infection of the skin is signalised by a rash (ground itch, Bentley), which he denies having had, infection by the mouth is more probable.

The symptoms shown by this patient are unusual. Vertigo, noises in the ears, mental depression, and apathy have been commonly observed and attributed to anæmia, but the report on the blood and the state of the mucous membranes are inconsistent with this explanation of the attacks. If the symptoms depend upon the presence of the parasite, as I believe, it is more likely that they are the effect of a poison secreted by the worms comparable with that which is formed by bothriocephalus. "Giddiness, epileptiform seizures, chorea, hallucinations and other neuroses" have been attributed, apparently with justice, to the presence of tapeworms; hysteria, convulsions, and chorea to threadworms; vertigo, hysteria, convulsive seizures, and mental disturbance to round worms; but in the accounts of ankylostomiasis the references to nervous disorders are scanty. Brumpt mentions vertigo, noises in the ears, impaired vision, mental depression, and apathy; Manson, tinnitus, vertigo, dimness of sight, mental apathy, and depression; Dock and Bass, headache, dizziness, mental dulness, insomnia, loss of knee-jerks, impotence, diplopia, nystagmus, and melancholy; Austregesilo and Gotuzzo have reported a case of delusional insanity cured by expulsion of the worms; and Macdonald has met with "moral perversity." But all these symptoms are such as might be caused by anæmia or by greatly impaired general health, which is often profoundly affected, but my patient's aspect is healthy; he has gained nearly 2 st. in weight since leaving India, and his organs of digestion and assimilation appear to be performing their work perfectly.

The presence of traces of blood in the stool is in accordance with the usual experience. The evidence in my case was a positive reaction with Boas's benzidine and peroxide of hydrogen test, but the amount was small. The worms undoubtedly suck blood and their alimentary canals are often full of blood when they are expelled, but the quantity lost by the host in this way is not estimated to be serious. It is supposed that the worms shift their position, frequently leaving wounds which bleed; some suppose that a more important cause of anæmia is the presence of a hæmolytic toxin demonstrated by Whipple, and the toxic effect is greater than the loss of blood. Looss believes that the worms not only suck blood but feed on the mucosa, but Dock and Bass express some doubt of the frequency of this occurrence.

The amount of eosinophilia present in this case was slight; it is now recognised that this blood change is most significant of parasitism, but it is not constant and may be absent in quite severe cases (Dock and Bass). In Stockman's case the eosinophilia varied from 12 to 43 per cent. of the total leucocytes. Boycott and Haldane in their report on the outbreak of the disease in Cornwall do not refer to this point. According to Dock and Bass the presence of eosinophilia shows that things are not so bad as they might be, and, in fact, they regard a rise of the eosinophilia as of good prognosis, while a fall is bad.

There was in this case no epigastric pain. This is a gnawing discomfort which patients seek to relieve by eating earth or coffee grounds or by chewing tobacco or gum (resin); indeed, in the Southern States of America doctors are said (Dock and Bass) to recommend tobacco chewing as a remedy.

The case illustrates the difficulty of successful treatment, for although the patient has taken remedies at intervals on an average of 14 days during the last five months ova are still discharged in the fæces, and therefore living females must be present in the bowel. As the worms do not develop in the intestine, the eggs undergoing no change until they reach the external air, and as my patient knows how to take proper precautions to prevent reinfection, I hope that a cure is being slowly reached; his head attacks have ceased entirely, and he maintains the same weight (April 29th, 1913). He is not at work, and has not been since his return to England. I have been disappointed at the small number of worms seen in the stools after each treatment; at no time have I found more than three worms in a single stool.

Owing to the need of a high temperature for the incubation of the eggs there is little fear of their developing in our northern climate except in mines, where the temperature is, of course, higher than on the surface of the land. Happily, so far it is only the Cornish miners that have become infected, and as they keep to their tin mines, and do not migrate to work in coal mines, the disease has not spread beyond Cornwall. If it did, there is no reason for supposing that it would not permanently infect the mining population in England as it has done in Belgium and Germany, and once the disease has become established it is extremely difficult to eradicate. As many of the harbourers of these worms present no symptoms yet are a source of danger by spreading the disease, it would be necessary to examine every individual in a mining population and to put all the infected persons under treatment, isolating them until it was proved that their fæces contained no ova. It is doubtful whether such a radical method of treatment would be practicable; it would certainly be very expensive.

Owing to the grave danger of allowing a carrier of this

infection to return to work, the treatment will be continued until the ova disappear from the fæces.

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Birmingham.

RADIUM EMANATION THERAPY.[1]

BY DR. W. ENGELMANN.

IN speaking of radium therapy it is best to distinguish between radium therapy in the narrower sense and radium emanation therapy. It is well known that in the former, which may be assumed to be most in vogue in surgery and dermatology, very strong radium preparations are used; the effect is produced by the rays emanating from the radium, the α, β, and γ rays. The effects in question are, therefore, very strong; they resemble those of the X rays of the Roentgen therapy. As examples I may mention the radiating of skin diseases of the most malignant and obstinate type, including even lupus and cancer—in which this treatment is often startlingly successful, and also injections in the case of malignant tumours, and recently in diseases of the hematopoietic system. In these two examples we have at the same time paradigms for the biological effect of the radium salt on the living tissue, which effect is twofold, namely, irritant—i.e., inflammatory and producing hyperæmia—and, secondly, destructive. In the application of radium emanation, the second kind of radium therapy, called radium emanation therapy, we have a weakened effect. This therapy most interests those who have to deal with internal diseases, and it is of this that I wish to speak in this article.

At Kreuznach, formerly known only for its brine mother-lye baths, a certain amount of experience as to the nature of the radium emanation and the manner in which it acts has been acquired during the five years that have elapsed since the systematic practice of radium emanation therapy began; and during these five years the Kreuznach physicians have endeavoured to give themselves and others some account of their experience in an annual collection of essays, the so-called "Radiologische Mitteilungen" ("Radiological Communications"). Not only does Kreuznach possess highly radio-active springs, it is also able to prepare very valuable radium solutions out of the residue obtained in the production of mother-lye; it possesses the only radium factory in Germany.

A number of investigations as to the biological effect of the radium emanation have been made and reported, which do not, indeed, yet give any unobjectionable explanation of the clinical results of the radium emanation therapy, but do justify the hope that such an explanation will one day be found. The nearest approach to a solution of the problem seemed to be made during the investigation of the effects of radium emanation on certain body ferments or on processes in the human or animal organism in which, according to the present teaching of science, enzymotic forces must be supposed to play a part. The actuating influence of radium emanation on the pancreatin, the peptic ferment, and the autolytic ferment is known. The explanation of Van der Velden's observation that radium emanation strikingly increases the coagulability of blood may also be that emanation exercises an actuating influence on certain ferments operative in coagulation.

We may assume a similar influence when we hear that Richet was able to promote the fermentation of lactic acid by a slight dose of emanation and to retard it by a stronger one. The same may be said of the fermentation of yeast, in which an exactly similar, partly retarding, partly promoting effect under the influence of different doses of emanation has been observed.

Von Noorden and Falta believed a connexion to exist between these fermentative processes and what they observed of the behaviour of the white blood corpuscles under the influence of radium emanation. In the human subject they found after emanation treatment a rise in the number of the white blood corpuscles and then an increased decay. They concluded that, as the white blood corpuscles were supposed to be the seat of the ferments, such a connexion was possible if the actuation of the ferments was really to be regarded as an essential effect of the radium emanation.

These biological influences at any rate show that the relation of radium emanation to the radium preparation as such somewhat resembles that of a concentrated medicament of very violent physiological effect to a diluted one; in the former very strong, violent biological effects, demanding the utmost caution in determining the dose and in the manner of application; in the latter a weakened effect, allowing us to apply the remedy more fearlessly. In certain circumstances the radium rays destroy the tissue, whereas the radium emanation actuates and promotes the processes in the body. In the same sense the increase of the phagocytosis, recently ascertained by Laqueur, is to be valued. Here, too, the question was of therapeutically applied doses. The fact that radium emanation has a retarding effect on the growth of several kinds of bacteria, including pathogenic ones, or even kills them, has been harmoniously ascertained in several different quarters. It cannot be turned to therapeutic account without more ado, because in the test-tube experiment comparatively high doses were given; but it is biologically interesting. Contrariwise Falta and Schwarz have ascertained by experiments in the field of vegetable physiology that even large doses of emanation may have a furthering effect on a physiological process. Emanation has an intensely furthering influence on the growth of oat germs.

It has also been ascertained by Plesch that the maximum pressure of the blood sinks under the influence of radium emanation, and that in some of the cases examined the medium pressure decreased, so that a diminution of the work done by the heart must be assumed. In many persons emanation increases the gaseous interchange, frequently also the elaboration of albumin. Finally, Kikkoji and Bernstein say they have ascertained an increase of the combustion of sugar.

We see, then, that in many cases the effects of radium emanation in experiments and in practical application run parallel. We find that it has an intensely stimulating effect on all the factors of assimilation, that it enhances, as it were, the vital processes. In this sense also I interpreted the results of a series of experiments which I made two years ago. Originally induced by the favourable effects of radium emanation on sufferers from gout, and following von Logham's example, I produced artificial tophi in rabbits. I injected liquid preparations of uric acid into the subcutaneous connective tissue, and observed the behaviour of the deposits under the influence of emanation. Untreated control animals with the same deposits served as objects of comparison. The slow resorption of the deposits which set in in obedience to physiological laws was quite considerably accelerated under the influence of radium emanation, the effect becoming noticeable within 24 hours. At the time when the experiments were made one might have been tempted to regard this phenomenon as a specific effect on gouty deposits, for at that time Gudzent's experiments had not yet been tested. It is known that Gudzent believed himself to have demonstrated that uric acid is found in the blood as urate of mononatrium, and that in two forms—a stable and a less stable one. Under the influence of emanation he found in the test-tube a transformation of the former form into the latter, and believed that in this phenomenon he had discovered an explanation for the removal of the uric acid from the organism, which is really observed. The experiments have been tested in two quarters and not confirmed. This, as is known, was one of the things that led to the rather vehement discussions of last spring, which somewhat discredited the emanation therapy. Unfortunately, or rather, not quite justifiably, for, firstly, Gudzent's experiments were afterwards confirmed. In Madame Curie's laboratory Mesernitzky, who conducted his investigation somewhat differently, found the same results. He worked, it is true, with very high doses of emanation. The question must be declared at least undecided.

[1] A lecture given at a clinical meeting of the Municipal Hospitals at Dortmund.

Secondly, however, the good therapeutic results could not be denied. Finally, the fact that the excretion of uric acid was influenced by emanation remained unshaken. Both Gudzent and Mesernitzky were able to ascertain an increase of the excretion of the endogenous uric acid and purin bases in healthy persons. In the case of sufferers from gout it was ascertained that exogenously introduced material containing purin was promptly excreted under emanation treatment, whereas the previous excretion had been slow. This would give us an idea of the manner in which radium emanation operates if we think of the definition of gout, which tells us that gout is the expression of a pronounced disturbance of the fermentative system of the elaboration of purin, which consists in the retardation of the formation, destruction, and secretion of uric acid, and leads to a permanent accumulation of uric acid in the blood, i.e., to uricæmia.

It is to be noted that the persons on whom Gudzent experimented had inhaled the emanation; they were in the so-called emanatories. Mesernitzky found the same results in the laboratory of the salt works belonging to the town of Kreuznach in patients who drank radium water. I must add, it is true, that these phenomena did not appear in all persons with equal intensity, as, indeed, be it said by way of anticipation, in the emanation therapy it is more than ordinarily necessary to individualise. The influencing of the blood is also subject to similar variation. It has been already mentioned that leucocytosis, frequently followed by leucopenia, was ascertained under emanation treatment in von Noorden's clinic. In His's clinic this effect has been ascertained even when the doses were small. My own investigations, it is true, do not confirm this, at least after drink cures. In dogs, on the other hand, when large doses were given, I found, as the Vienna investigators did, quite considerable leucocytosis, which lasted till a fortnight after the last dose. It is true that I gave them doses up to 50,000 units a day (Mache Einheiten); to human beings one gives 1000 to 3000 units (M.E.). In certain forms of diseases those high doses will be more frequently given in future than hitherto. We are reminded in this connexion of the effects of thorium, the sister element of radium, on the hematopoietic system, and of its therapeutic effects in diseases of the blood. It seems to me not impossible that high doses of radium emanation may have a similar effect, but this question has not yet been thoroughly investigated.

A word or two now about the *forms of application*. We administer emanation by means of baths, inhalation, drinking radium emanation water, rinsings out, enemas, or compresses. For a while baths did not enjoy among the radium therapeutists the reputation which they decidedly deserved. Quite unintelligibly, if one considers that at watering-places with waters rich in emanation this form of application has long been one of the most favoured. Löwenthal believed that he had ascertained that emanation, which, as is known, has all the characteristics of a gas, does not penetrate through the skin into the body, and that therefore baths are useless. Even if he had been right, his conclusion was a hasty one, for the agent in question was comparatively unknown, not yet exhaustively studied, and, above all, the possibility of the α, β, and γ rays exercising an influence in the form of induced activity, which precipitates itself on the body on all sides, was left out of account. I may remind the reader that emanation, as already said, is a gas which emanates from radium. It is, as is known, colourless, odourless, tasteless, and is best demonstrable in the air, in springs, and in fluids in general by means of the electroscopic method. Emanation electrifies the air, and thus acts, e.g., on the little plates of an electroscope. The measuring method is extremely simple and should always be applied when clinical observations are made after emanation therapeutic measures. The understanding of its behaviour in the organism is facilitated by remembering that emanation is comparatively short-lived. It disappears within about eight days, disintegrating into solid elements, radium A, B, C, D, &c., which also have a more or less long duration, and emit the biologically effective rays, while they precipitate themselves, if we will conceive it so, on the cells in the organism. Radium emanation water must therefore always be applied as fresh as possible, because otherwise its strength does not correspond to that perhaps ascribed to it.

To return to the baths, I was able three years ago to demonstrate at Strasburger's clinic in Bonn that the emanation does indeed penetrate through the skin during a bath, and is demonstrable in the blood. My measurements were afterwards confirmed from another quarter, and the reputation of baths was restored. According to more recent investigations the penetration of emanation into the body seems to be even more considerable than I then supposed. Thus, also, a new justification was given for the application of poultices, which Strasburger had strongly advocated from the outset. There is, it is true, no doubt that the manner of operation is not thereby exhaustively explained. It is not only the emanation that has penetrated into the body that operates, as does also the inhaled emanation; the β and γ rays that penetrate through from without operate too. Perhaps also the α rays, which are, indeed, biologically very effective but do not penetrate so deep, operate by irritating the nerve terminations or the like. To be worthy of the name, a radium bath must have a strength of at least 7000 to 10,000 units (M.E.). Baths containing less than that are *not specifically* effective. The baths given at Kreuznach contain 22,000 units. If necessary, and if patients can stand it, emanation water can be added till the bath has twice or three times that strength or more. The temperature is that of an ordinary bath, and the patient should stay in it as long as possible. Our patients are not allowed to dry themselves, but rest, wrapped in their bathing-sheets, for 20 to 30 minutes till the emanation dries in, in order to secure the longest possible duration of its influence.

Another method of conveying the radium emanation into the body is by drinking.

After long controversies the opponents of the drinking method now admit that it is at least not inferior in value to inhalation. It is now admitted on all hands that it was, first and foremost, the Kreuznach doctors who always kept emphasising the effectiveness of the drink cures. The opponents contended that when one drinks emanation water it gets after resorption in the intestine only into the small circulation, and that, owing to its instability, the gaseous emanation is so completely exhaled in the lungs that only infinitesimal quantities get into the great circulation. My above-mentioned experiments, in which I gave the animals 60 grammes of emanation water daily—i.e., 600 units—per os with the œsophageal probang, spoke strongly, in harmony with the numerous clinical observations that had been made not only at Kreuznach but also elsewhere, for the value of stomachic incorporation. Accurate investigations of the blood—i.e., measurements of the blood with a view to ascertaining how much emanation it contained—which had been made in the most various quarters by Strasburger, Lazarus, and others, proved unambiguously that the drinking method is a very rational one. Not less than two years ago I had ascertained in the case of a dog with an intestinal fistula that even an hour after a dose of emanation water the intestinal juice contained about 30 per cent. of the emanation-content of the dose. It follows that the passing of emanation into the blood lasted for at least that length of time. By measurements of the blood of dogs I was then able to ascertain as a fact that emanation is still demonstrable with certainty in the blood *even two hours after drinking*. If, therefore, the patient drinks small quantities of radium emanation water four to six times a day, a lasting loading of the blood with emanation can easily be brought about. And at Kreuznach the method has already stood the test of experience for a long time. In general the patients drink from 1000 to 3000 units (M.E.) a day. Of course one must begin with small doses, and increase them only if the water agrees well with the patient.

The third principal form of application is *inhalation*. The idea of incorporating emanation as gas with the organism by inhalation was obvious. So-called emanatoriums were constructed—little rooms the air of which was loaded with emanation. In these a number of patients could sit, and thus conveniently inhale emanation. Apparatus was provided for the absorption of bad air and the introduction of oxygen. It was believed that during a patient's stay in such a room the incorporated emanation could be rightly retained in the organism. It is possible that the emanatorium treatment thus came to be overrated, especially when Gudgent claimed to have ascertained that during one's stay in such an emanatorium even an enrichment of the blood with emanation took place. If this were the case, there must be an affinity between emanation and blood. There is, however, as Plesch and I were able to demonstrate by joint experiments, no such affinity. The manner in

which we experimented even led us to the result that blood takes up about 10 per cent. less emanation than water does. The above-mentioned investigations of the blood by several writers also spoke against the opinion. It is, therefore, probable that an enrichment does not take place, though a plentiful loading of the blood, corresponding to the quantity of emanation used, does. The stay in emanatoriums is, therefore, very well fitted to bring emanation into the body, and therefore to be therapeutically effective. The constructors of emanatoriums have been blamed for bringing only the so-called two-unit emanatoriums into the market—i.e., such as contain two units (M.E.) per litre of air. That is not sufficient, at least for the majority of patients. One must be able to demand from eight to ten units. Von Noorden complains that they do not adequately meet the necessity of adapting the doses to the requirements of the individual patients. He prophesies a greater future for the inhaler designed for only one person. It is portable, and can be used by patients who are confined to bed; it is also cheaper, allows one to vary the dose, and does not compel patients to sit together in a little room in which the air is often bad.

Along with Professor Bickel I some time ago perfected, tested, and showed to the Medical Society of Berlin such an inhaler intended for one person. It is intended to serve as supplementary to any apparatus for the preparation of emanation water—Neumann's activator, for instance. In my opinion one is best able to practise rational radium emanation therapy if one uses two such apparatuses, no matter of what system. One has the option of giving radium baths, poultices with radium water, rinsings out, enemas, nutrient enemas, emanation water to be drunk, and, lastly, emanation to be inhaled with the help of an inhaler intended for the use of one person.

We come now to the groups of diseases for which radium emanation therapy is suited, and here the first disease to be named is gout, genuine gout, arthritis urica, for which radium emanation seems in many cases to be almost a specific remedy.

I remind the reader of the above remarks on the influencing of the assimilation of purin. The best treatment is that in which all the above-mentioned forms of application—drinking, inhalation, baths, compresses if necessary—are cautiously combined. If the organism reacts—it is a singular fact that there are not a few cases in which it does not—it frequently happens that the feeling that it is taking effect soon sets in. After from four to six days the known reactions take place, pains in the joints in the most different parts of the body, often as severe as in a typical attack of gout, but for the most part of shorter duration. Antipyretics and atophan may be given for a time. Then the reaction abates, and the effect slowly sets in. Subjective and objective improvement takes place. In contradiction to von Noorden I wish to state that the tophi do become softer. Strasburger and others have also noticed this. The treatment—in cases of necessity a drink cure alone suffices—should last six weeks, and it seems advisable to repeat a drink or inhalation cure once or twice a year, the choice being determined by the remedial resources of the patient's place of residence.

Another large field for the advantageous practice of emanation therapy is articular rheumatism in its most various forms, above all the primarily chronic polyarthritis exsudativa and the primarily chronic arthritis sicca, which occurs, I presume, mostly at an advanced age. The treatment is the same as that sketched above, but here the use of baths and poultices is very decidedly to be recommended. Under certain circumstances the abvisability of injecting radium solutions is also to be considered. Here, too, there may be slight reactions—pains and sometimes a slight increase of temperature. Sciatica, too, is a malady in which the treatment is likely to be rewarded by success, but owing to the multiformity of its etiology there are, of course, unsuitable cases. When all other therapeutic measures fail a trial is much to be recommmended. I have seen cures and many partial cures myself. In general the effects on many other disorders of the nervous system are notable. This fact is probably connected, as Strasburger points our, with the antiphlogistic and resorption-furthering qualities of emanation. Moreover, von Knaffel-Lenz, of Vienna, professes to have ascertained by experiment that the healthy nerve tissue is influenced by emanation. All kinds of neuritis and neuralgia are suitable objects of treatment. Here, too, besides drink and inhalation cures, baths and compresses play a great part. The effect of the latter, e.g., is often subjectively ascertainable immediately after application, often diagreeably at first. I have seen two extremely obstinate cases of herpes zoster in persons fairly advanced in years, which had defied every kind of treatment, quite surprisingly bettered. These are only instances among many. The lancinating pains of sufferers from tabes dorsalis are relieved. Then there is the myalgia group. Besides all these, I mention also bronchial asthma, presclerosis, arterio-sclerosis, and diseases of the genitals of women, especially in cases in which it is important to assist the resorption of chronic exudates, swellings of tissue, and the like. And, in general, adhesions, tissue thickenings of every kind, formation of callus, formations of scars cannot be otherwise than favourably influenced by a combined local and general emanation treatment. Advantageous results after radiation with radium preparations in cases of myoma and disturbance in menstruation have quite recently been reported from the Freiburg clinic for women. In these cases the radiation with radium rays took the place of radiation with Roentgen rays. It seems to me not impossible that the somewhat milder application of these rays practised in radium emanation therapy will in future play a more important part in the treatment of women. The experience gained at Kreuznach, where female patients are very numerous, speaks strongly for this opinion. But the decisive, quite objective observations cannot be made at a watering-place. At any rate, a histologically demonstrable influencing of the ovaries and also the occurrence of miscarriage after mere drinking of emanation water have already been experimentally ascertained. By means of poultices, rinsings out, and, above all, nutrient enemas, the use of which is already very frequent at Kreuznach, it will also be possible to render the general radium treatment of the diseases of women very powerful local support.

The skin diseases belong in general to the province of radium therapy in the narrower sense—i.e., they must be treated by radiation with radium preparations. In many obstinate cases, however, radium emanation also may well deserve to be recommended. I will not enumerate all the maladies for which the emanation treatment is suitable, but only mention some cases of cured or very considerably bettered scleroderma reported in the literature of the subject. One such case I saw myself. So far as I am aware such cases defy every other treatment.

I do not mean to say that the treatment in question is, as a matter of course, the only right treatment for all the phenomena of disease which I have somewhat copiously enumerated, but only that in suitable cases it is reasonable and worth while to try it. After all, this therapy is still young, and it is possible that our views as to the question what diseases it is suitable for may undergo considerable modification. Von Noorden thinks it is applicable to still more diseases than I have mentioned. He believes, for example, that attempts to cure corpulence on the lines of the above-mentioned experiments concerning the enhancement of fundamental assimilation would have a great chance of success. Of the treatment of certain diseases of the stomach he thinks the same; he has seen good results in cases of nervous gastritis. A fellow doctor drew my attention to the fact that his achylia gastrica, which had greatly impaired his health and defied all treatment, had so considerably improved after a drink cure that he now, months afterwards, felt better than ever. I believe that strictly clinically conducted experiments in this direction will not fail to be rewarded.

Finally, I mention the effect of emanation on the power of generation. The observations come from the most various quarters, above all from von Noorden and from doctors at Joachimsthal and Kreuznach. The phenomenon would harmonise very well with the results of O. Hertwig's investigations, who ascertained a quite specific effect of the radium rays on the nuclear substances of the two sexual cells, and with the observations of Halben, who succeeded in enhancing the secondary symptoms of sexual passion in water-newts by radium emanation. Affection of the kidneys, tendency to bleeding, and tendency to miscarriage are regarded for the present as contra-indications.

I conclude my statements and enumerations, which, owing to the shortness of the time at my disposal, cannot be

complete, and which aim only at giving a general idea of the nature of radium emanation therapy. I believe one need not be too much of an optimist to be able to endorse von Noorden's declaration that radium emanation therapy may now be justly regarded as belonging to the solid stock of medical therapeutic measures.

Bad Kreuznach.

THE USE OF TUBERCULIN IN DIAGNOSIS AND TREATMENT.[1]

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Tuberculin in diagnosis.—The specific tuberculin tests are four in number: (1) the ocular reaction of Wolff-Eisner and Calmette; (2) the cutaneous reaction of von Pirquet; (3) the percutaneous reaction of Moro; and (4) the subcutaneous reaction of Koch. All the above tests have their appropriate individual uses. They depend on the existence of that "paradox reaction" termed anaphylaxis.

1. Calmette's ocular reaction, described in 1907, has since then attracted considerable attention. Many precautions are necessary in its application, and, even so, the test is not without a certain measure of risk to the eye, so that both for this reason and because, moreover, it is not as sensitive as the other three tests I have mentioned, it has now largely fallen into disuse in general medicine.

2. Von Pirquet's cutaneous reaction. The chief value of this reaction appears to be in the case of children under 5 years of age, where a positive reaction may be taken to indicate the presence of definite tuberculosis. In adolescents and adults a positive result must be reviewed in conjunction with all other available data before an opinion be given.

3. Moro's percutaneous reaction is a modified von Pirquet's reaction, and is readily performed by rubbing into a small portion of the skin an ointment of equal parts of old tuberculin and anhydrous lanolin. Occurrence of a localised dermatitis denotes a positive reaction. The ease and safety of this test are its chief advantages.

4. Koch's subcutaneous test is necessarily preceded by the patient's temperature being recorded three-hourly for at least three days before the injection, since this test should only be applied if the temperature is below 99° F. For adults the first test dose consists of 0·001 c.c. old tuberculin (O.T.). If no reaction ensues 0·005 c.c. O.T. is given in three days, and if still negative 0·01 c.c. O.T. at a like interval of time. In the continued absence of reactions one may say that no tuberculosis is present. For children over about 10 years of age the diagnostic dose may often be equivalent to that for adults, but for a child of 5 years of age the initial dose should not exceed 0·0005 c.c. O.T. and the next subsequent dose 0·0025 c.c. O.T.

The complete and typical reaction which may be expected, if tuberculosis is present, is in nature tripartite—viz., focal, local, and general, these manifestations being given in the order of importance. The focal reaction is essentially specific and produces hyperæmia and inflammatory swelling around the tuberculous focus, this in the lung being evidenced by the presence of new or increased moist crepitations in the affected patch, and appearance or increase of tubercle bacilli and elastic fibres in the sputum, which may be, and often is, itself increased in quantity. I regard the focal reaction as by far the most definite and conclusive of the three. Next comes the local reaction at the point of injection, which gives similar clinical appearances (apart from the papula) to the von Pirquet reaction. The general reaction is shown by fever and consequent malaise, &c. A rise of 1° F. or more may be regarded as positive, and this comes on about 8 to 12 hours after the injection, appearing usually on the temperature chart as a peak with sharp elevation and decline, the downward slope at times being interrupted by a second rise usually of lower, but occasionally of higher, level than the first.

Of all the diagnostic tests the subcutaneous one is, in my experience, the most reliable. If no tuberculosis is present tuberculin has no ill-effects. This fact alone encourages one to use tuberculin at the earliest moment to pick out cases suitable for sanatorium and tuberculin treatment from those for which these remedial methods are either inadvisable or unnecessary.

Tuberculin in treatment.—In the brief space at my disposal I cannot hope to do more than touch upon a few salient points based upon clinical observation in my tuberculosis department. The preparations of tuberculin are many and various. I find that some patients are more sensitive to one form of tuberculin and less sensitive to another, so that if intolerance of one kind of tuberculin is manifested it is wise to make a change. The main point to remember is that, no matter what preparation is used, sufficient time must be allowed for proper spacing of doses, and that it is never good policy to attempt to proceed too rapidly. If the remedy is to be beneficial, I believe that throughout one should try to avoid all but slight reactions, the only exception being in early stages of the weak preparations, where hypersensitiveness can be overcome by cautious increase of dosage at comparatively short intervals. This has the effect of inducing tolerance to the successive stronger doses, whereas repetition of the same or smaller doses at longer intervals appears to produce, and, if present, to intensify, that very condition of extreme sensitiveness which one is so anxious to avoid. Hence under such conditions one's motto must be, "Vestigia nulla retrorsum." Should, however, such procedure fail, the only course is to suspend the treatment for some weeks.

As to the *scale of dosage* which should be adopted there is no hard-and-fast rule. It is impossible briefly to give a set scale to which one should work, for not only has one to deal with each individual patient as a separate problem, but also to be guided by the ever-varying factors of the patient's sensitiveness in particular and of his state in general. In my own practice I have abandoned other methods for the intensive system of dosage. In the treatment of pulmonary tuberculosis I begin with small doses of a weak bovine preparation—e.g., 1/10000 c.c. or less of P.T.O.—and working through increasing doses of this to bovine old tuberculin (P.T.). I complete the treatment in all cases where necessary by a course of human tuberculin, usually O.T. or albumose-free old tuberculin (T.A.F.), finishing with doses of 1 c.c. or even more at longer intervals. In the earlier stages of treatment my custom is to inject every three or four days, and when larger doses of the strong preparations are reached, once a week.

Since the administrator cannot, with any accuracy, check the number of milligrammes of solid active substance contained in the particular preparation used, I invariably record dosage in terms of cubic centimetres, for one can always measure exactly the amount of fluid that one injects. Tuberculin, when diluted, soon becomes inert, so that fresh dilutions should be made at least once a week. I nearly always make the dilution with freshly prepared saline solution containing 0·5 per cent. phenol at the time of administration. This procedure takes a little longer, but one thus avoids severe reactions consequent upon a potent dose following one which has been inactive.

On these lines immunisation can usually be attained within from 4 to 12 months, and various statistics show that such immunisation is capable of persisting over a period of several years.

In cases which are doing well the dosage can be increased more rapidly, so that the total time of immunisation is thus shortened. In advanced cases tuberculin does good at times in checking the rapid onward march of the disease, and the temperature may be brought to normal with apparent amelioration of physical signs to percussion and auscultation. Other cases, again, do badly. X ray examination in both these classes not infrequently reveals increase in shadow in the lungs, but in a case doing well in other respects it would be hard to say that such increased opacity represents extension of disease, since augmentation of visible shadow may quite well be due to attempt at repair by fibrosis. Should the disease progress notwithstanding cautious injections, tuberculin should be discontinued.

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[1] Abstract of a paper read at a meeting of the Chelsea Clinical Society on April 15th, 1913.

THE TREATMENT OF CONFIRMED CASES OF HIGH BLOOD PRESSURE:

THE UNDESIRABILITY OF ACTIVELY APPLYING THERAPEUTIC MEANS TO REDUCE IT.[1]

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CONSULTING PHYSICIAN TO THE HALIFAX ROYAL INFIRMARY.

THE instrumental estimation of blood pressure is comparatively new in the investigation of disease, and without doubt it has been very helpful in the treatment of certain cases. But whilst the sphygmomanometer gives us a reading which forms a good working basis in treatment, readings must not always be considered as representing the exact measurement of blood pressure, for in certain circumstances, particularly when the subject is emotional or unduly anxious, the readings may be higher than they should be, and this we should allow for to some extent. It is rather more than a year ago—when I opened a discussion at the Leeds Medico-Chirurgical Society on some aspects of high blood pressure requiring special consideration in treatment—that I particularly pointed out that in some cases increased pressure remained high whatever measures were taken to lower it, and that it was wrong treatment to press vasodilator remedies in such circumstances.

It has been one of the unfortunate by-products of our recently acquired ability to determine a patient's blood pressure in millimetres of mercury that the sight of the column near the top of the tube has so often led to immediate endeavours to reduce the pressure at any cost (Janeway). This point is not sufficiently recognised by some practitioners who make use of the instrument, and I get cases of high blood pressure sent to me at Harrogate for special treatment to reduce it, in which nitrites, large doses of iodide of potassium, and other depressing remedies have been used, with the story that the pressure will only partially yield to treatment. The fact is that owing to the gradual increase of blood pressure each individual readjusts his cardiovascular physiology to compensate this, and the physiological limit is now not 140 or 150 mm. Hg, but may be 220 or 250, and to reduce the pressure below this new physiological limit is not only not indicated, but is bad therapy. "The fact should be emphasised that supernormal arterial pressure is not itself a primary condition to be attacked or controlled as such. It is invariably a result of some pathological cause or causes, and it is, moreover, often a necessary evil the result of conditions we cannot remove, and then it must be looked upon as a compensatory effort, as one of the natural defences of the body" (Oliver).

A patient, aged 65, was referred to me two years ago as having had a high blood pressure for some years, and he had had considerable therapeutic attention paid to it. He had been a great athlete and rowed in his University boat three years. When I saw him the pressure showed a reading of 180 mm. Hg, and he was dyspnœic on exertion. His heart was enlarged, the apex beat 1½ inches outside the nipple line with very irregular action. There was no albuminuria and the vessels were not palpably thickened. It was clear that the compensatory hypertrophy which had helped him so long was failing. I gave him no lowering treatment, but that which was directed to the raising of his pressure, and advised moderate exercise with plenty of rest between. I gave him strophanthus and nux vomica to raise his pressure, and he had Nauheim baths and Schott exercises to open out his peripheral circulation, which was contracted. After three weeks' treatment his blood pressure was 15 mm. higher and the heart more regular, and he returned home much better. He made another visit last year, having taken strophanthus as required under the directions of his medical man in the interim, and his blood pressure was in a still more satisfactory condition, for it was steady at 200 mm. Hg, and he was able to do his ordinary amount of walking exercise quite comfortably. This was plainly a case where it was wrong to deprive the patient of a support and force necessary to maintain his smaller circulation by giving vasodilator remedies indefinitely.

For three years I have had under observation a patient, aged 69, who when I first saw him had a blood pressure of 220 mm. Hg, and with the exception of occasional slight giddy attacks after prolonged exertion he suffered no serious symptoms. The heart's apex was very little out of its normal position and his kidneys apparently were good. He had had constipation for years and the sphincter ani had been stretched to relieve it. I therefore gave him a little intestinal lavation, but it was not found necessary to do so after a few douches. His pressure was down to 200 mm. after this treatment and some massage douche baths, but I heard from his medical man that it was soon back again to 220 mm. He had been given 20 gr. doses of iodide of potassium to reduce the pressure for a considerable time, but with no marked result except to mentally depress him. My advice to him has been to live a healthy life, avoiding alcohol, red meat, and salt, to take aperients for the constipation, and exercise, and leave the iodide and other depressants alone. I have recently heard from him that he is keeping well, and is continuing his *régime*.

The following case is an extreme example of a class not uncommonly met with: high blood pressure, with some cardiac hypertrophy, and symptoms for years referable to a certain amount of disturbance of the liver and bowels in the middle-aged, who show no signs of arteriosclerosis in the systemic periphery, and no clinical evidence of nephritis after examination for albumin and casts. Sir Clifford Allbutt has called attention to these cases, and he names them hyperpiesis. It is a curable condition if caught early, but if not it frequently ends in a permanently high pressure, and possibly in apoplexy, or cardiac defeat in trying to overcome the supernormal pressure.

A medical man, aged 58, was sent three years ago for Harrogate treatment. He had been seen by two physicians in a northern city who thought the symptoms I am about to describe due to the development of some cerebral disease. The patient had taken a fair amount of alcohol, but none for the five years previous to his illness, but he had been a big eater of red meat. He worked hard in a country practice and was subject to bad headaches, for which he frequently took calomel and antipyrin. He had, however, what he called a seizure, which he described as being constituted by great pain and throbbing in the head and marked giddiness in the erect posture. I was asked to see him in consultation with Dr. Gordon Black some weeks after this attack. He was very emotional, and was rather like a candidate for cerebral softening. He complained of throbbing in the head, and was more or less giddy in the erect posture. On examination the pulse was one of very high pressure to the touch, and the sphygmomanometer showed a systolic pressure of 220 mm. Hg. As is my custom, I looked for corroboration of this in the position of the heart's apex, which was a full inch outside the nipple line. There was no albumin, and the urine was of good specific gravity. We came to the conclusion that the symptoms were due to the high blood pressure, and that the only possible chance for the patient was to give him perfect rest with a very strict diet. All meat was forbidden as well as salt. He continued to have nothing but milk and fish for the three or four months whilst under our care. He was well purged and the skin was kept active, but he was much too ill to have any balneological treatment. The blood pressure gradually came down, and the apex beat came in, and after four months' rest he was able to walk fairly comfortably without much throbbing or pulsation. The patient eventually got back to his work, and continues well. He lives practically on the same lines of diet, taking no red meat or alcohol, and is now able to do as hard a day's work as he ever did, and when visiting Harrogate last year we found his pressure 140 to 145 mm. Hg only.

This is an instance of what can be done for some cases of high blood pressure in the way of treatment when seen early. This patient had no nitrites after the first week's treatment, for they had no effect in reducing the pressure, neither did he have iodides, and we may attribute his recovery to rest, alteration in diet, and more or less free purgation with calomel and salines.

A natural question to ask is, How are we to determine the true position of a case of supernormal pressure? These cases always give us anxiety, and rightly so, for we are confronted with two dangers, and with one eye we see visions of a possible catastrophe through the rupture of a weak vessel by doing too little, and with the other the danger of doing too much in lowering the pressure and weakening the cardiac force. My reply to this is: take a careful history of the case and observe the condition of the cardiovascular, the renal and alimentary systems, and try to

[1] A paper read before the Balneological Section of the Royal Society of Medicine on April 14th, 1913.

find out the cause of the high pressure, such as errors in diet, alcohol, syphilis, lead, and excessive worry, remembering that supernormal pressure is not a disease *per se*, but a symptom only. If the left ventricle is hypertrophied it suggests the pressure has been persistently high for some months or years. Experience teaches us that with a restriction of red meats and alcoholic drinks from the dietary of those who take them freely the pressure, if not a permanently high one, usually diminishes, and this argues that purin bodies and alcohol probably act as vasoconstrictors. Waste is constantly going on in the body, and it is important to get rid of the products of waste whatever they may be The proof of the splanchnic vessels being some of the earliest to become affected in arteriosclerosis points to our relieving congestion of the visceral vessels, which can be done by judicious purgation, and 1 gr. doses of calomel and saline purgatives are most useful two or three times a week. One of the greatest outlets for waste products is the skin, and when inactive a free action of this organ must be encouraged by artificial means, such as by massage-douche and Nauheim baths, when these can be obtained, and intestinal lavation is also very desirable in cases with constipation. It is a common observation that with a dilated periphery causing an active skin we have a lower range of blood pressure, which leads us to suggest to those who can afford it to follow the sun. The cardinal principles of treatment, then, resolve themselves into a strict regulation of the intake and an active outlet for the waste products, and moderate exercise followed by rest is very desirable to give a better distribution of the blood. In all cases observations must be made with the sphygmomanometer from time to time as a guidance in treatment.

If in spite of our *régime* and treatment the pressure continues high after having watched the case carefully for some months, we conclude that this is a case in which the pressure is permanently supernormal. In any case, we recommend the general *régime* to be continued, and so long as no urgent symptoms arise the patient may do his work in life if he avoids excitement and sudden strain. Lastly, we must not use any *active* means to reduce the pressure, remembering that it is probably an advantage and necessary that the pressure should be high for the maintenance of an adequate supply of blood to vital organs. As for drugs of the vasodilator type, I mean the nitrite group, I use them very little except in emergencies, for I believe it is sounder treatment to get rid of the bodies in the system which contract the periphery by the means I have mentioned, rather than by dilating up the blood-vessels with the offending poisons still intact. I give iodides very carefully, if at all, but if there is any syphilitic history they may be pushed. As for gypsin, this I have given a trial in some cases, but with no marked results.

Harrogate.

PROTOZOAL-LIKE STRUCTURES IN THE BLOOD IN A CASE OF BLACK-WATER FEVER.

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THE cause of blackwater fever still remains one of the most important problems unsolved in tropical pathology. A friend of mine, aged 28 years, who had never had an attack of blackwater fever, arrived in England on Dec. 23rd, 1911. He had resided in Rhodesia for four years and had enjoyed comparatively good health. On Dec. 27th, after a dance, he passed blood-stained urine, and shortly afterwards had rigors, bilious vomiting, and a temperature of 104·2° F. He passed through an acute attack of blackwater fever. The urine on the fifth day became quite normal, but he collapsed, sank into a comatose condition, and died on the sixth day. Throughout my attendance upon him I took numerous blood films and fresh cover-glass preparations. The films were stained with Leishman's stain, or with Leishman's first and then with Giemsa, or fixed in absolute alcohol and stained in the usual way with Giemsa's stain. The fresh preparations were examined very shortly after they were made by ordinary and by dark-ground illumination.

Examination of the Blood.

No enumeration of the cellular elements was made during this short illness, and the hæmoglobin was only estimated once, on the last day, when it proved to be 14 per cent. The following tabulated statement shows the percentage of the leucocytes during the illness :—

—	Dec. 27th, 1911. 12 noon.	28th, 12 noon.	28th, 6 P.M.	29th, 12 noon.	30th, 12 noon.	31st, 12 noon.	Jan. 2nd, 1912. 3 P.M.
	%	%	%	%	%	%	%
Polymorphonuclear ...	74	68	65	63	61	64	47
Lymphocytes...	12	19	21	10	15	14	20
Large lymphocytes ...	12	12	13·5	27	23	20	28
Eosinophiles	2	1	0·5	0	0	0·5	1
Myelocytes	0	0	0	0	1	1·5	4

The leucocytes were apparently about normal in number during the first three days. Thereafter they increased, and on the last day on which films were taken there was a very pronounced leucocytosis. Some few of the leucocytes contained small vacuoles in their protoplasm on the first day of the fever, a condition not uncommonly met with in several pathological states of the blood. In addition to these, one or more large vacuoles, as large in some cases as a red blood corpuscle, were not infrequently seen, especially in the last stage of the disease, and two or three most perfect examples of leucocytes containing a red corpuscle in their interior were found. One of these erythrophagocytic leucocytes was a polynuclear, the other a transitional form of white cell. The red blood corpuscles were in the first stages of the fever fairly normal in size, shape, and staining reaction, and remained more or less so till about the fourth day of fever, when moderate signs of anæmia became evident and a few nucleated red corpuscles were found. Basophilic and polychromatophilic degeneration of the corpuscles, although occasionally seen, was very infrequent at this stage. On the last day (Jan. 2nd), however, when the hæmoglobin had fallen as low as 14 per cent., all signs of degeneration alterations in red corpuscles were abundantly evident, and the blood picture was not at all unlike that seen in advanced pernicious anæmia, with the exception of the marked leucocytosis. A very conspicuous feature now was the large number of nucleated red blood corpuscles of all sizes, many showing signs of mitotic division. Whilst counting in the stained films 100 leucocytes I met with no less than 16 nucleated red corpuscles of various sizes.

So-called ring bodies described by Cabot and others were numerous in the films taken on the last day. Red blood corpuscles, often showing pholychromatophilic degeneration, were seen containing red stained rings in the form of complete circles, figures of 8, or other weird shapes. These are commonly met with in many forms of severe anæmia. Free rings straightened out into threads, and staining a deep red with Giemsa's stain, were commonly seen. But what I had not previously observed in other severe anæmias was the presence of long threads of a deep red colour entering into or coming out of the bodies of lymphocytes or nucleated red corpuscles. One in particular I photographed. I should think it was a nucleated red cell having a diameter of 12μ, with a nucleus measuring 7μ. Running into this or from it was a deeply red-stained thread thicker in the middle, measuring 39μ in length, of which the part outside the cell measured 26μ, whilst the remaining length which was coiled within the protoplasm of the cell was 13μ long.

Special attention was directed to the red cells in the early stages, and every attempt was made to try to find any bodies within their interior of the nature of piroplasms. In not a few red cells specks of stained substance were found, lying for the most part towards the margin of the corpuscle. These, when examined with the highest power available (about × 3000), were seen to consist of small round-shaped dots often connected together by a very fine filament. They stain with Giemsa a dark dirty red colour, and not a distinct red as chromatin generally does. My friend Mr. E. M. Nelson kindly examined some films and recognised these intra-corpuscular bodies, but naturally was not able to express any opinion on their nature. He

very kindly took some micro-photographs of these structures at a direct magnfication of 3000 diameters. I cannot lay much stress on the importance of such minute structures, but the fact that they were visible in the corpuscles in air-dried films before being subjected to any staining excludes the possibility of their being of the nature of a deposit or precipitate of stain on the surface of the corpuscle. I should add that they were most easily detected in dry unstained films when examined by dark-ground illumination, but this fact does not preclude the possibility of their being degeneration changes in the red cell.

Very prolonged and repeated examinations extending over several weeks were made of the numerous films of blood taken at all stages of this attack of blackwater fever, and as a result I would state that no form of malarial parasites or pigmented leucocytes was ever seen in the fresh preparations or in about 40 stained films most carefully and exhaustively examined.

Repeated examination of fresh cover-glass preparations both with ordinary and with dark-ground illumination failed to show anything moving in the plasma of the nature of a trypanosome or spirochæta. Stained films gave the same negative result.

Granular blue bodies with red-stained structures.—In some of the blood films taken towards the latter stages of the disease a few peculiar granular bodies were found. The earliest period at which one of these was seen was the fourth day of fever, and then only a single example was found, but they were more frequent on the last day. These bodies were only found after a careful search and were always exceedingly rare. In nine films only 36 such structures were detected, giving an average of 4 per film, which was about ¼ in. square. In some preparations only one granular body was found, whilst in another film as many as 17 were noted. They were not found in any of the films taken during the first four days.

In shape these bodies are nearly always spherical, sometimes oval, and very rarely somewhat irregular in outline. They have a very definite outline, and often a thick capsule or membrane seems to surround them. (See illustration.) The protoplasm stains usually a pale blue colour, sometimes a deeper blue, at other times a bluish-red tint.

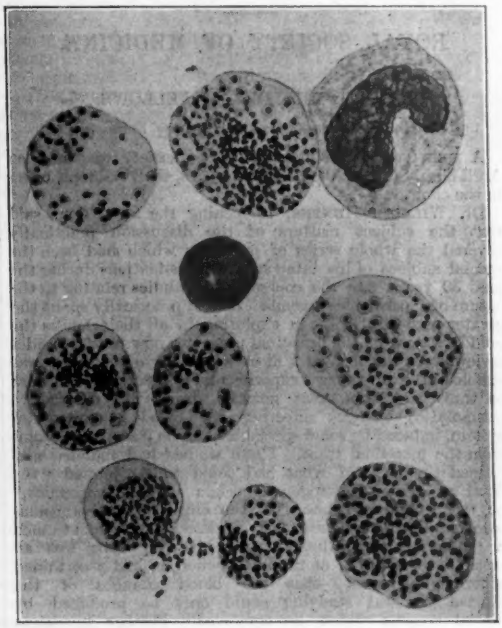
These granular bodies varied in size. The average measurement of 30 specimens was 11·2μ in the longer and 10·7μ in the shorter diameter. The smallest typical example was round and measured 5μ; the largest was oval and measured 17μ by 10μ in diameter. They do not contain a nucleus such as would be seen in a leucocyte, but contained within the protoplasm is a number of small round or oval dots which stain a deep chromatin red colour. These small structures are generally spread irregularly over the protoplasm of the cell, and are often more numerous in the centre than at the margins. The number of chromatin-stained bodies contained within one cell varies considerably, but probably there may be as few as 40 or as many as 200. In most specimens these chromatin dots are situated in a small unstained area, or each dot is surrounded by a narrow ring of faintly stained structure.

These minute intra-corpuscular bodies have a very vague outline, but when examined with the highest powers appear to consist of a dot of chromatin surrounded by a small amount of protoplasm. They appear round or oval and measure about 0·3μ to 0·75μ in diameter. Somewhat larger ones are seen oval or rod-shaped measuring 0·8μ by 0·4μ. Sometimes the chromatin dot has a tail of protoplasm and the whole body resembles that of a minute tadpole. Similar bodies are met with in the protoplasm of a few very large mononuclear leucocytes.

What is the nature of these granular blue bodies containing red-stained structures? The fact that they were only found towards the end of the disease when the blood was very rapidly becoming anæmic, and that they were then associated with the presence of nucleated red blood corpuscles, might suggest that they were degenerative red blood corpuscles containing nuclear remains or nuclear dust. Their general appearance, their staining reaction, the marked contour or outline, not to mention their size, seemed to negative this theory.

The second possibility is that they might represent some form of leucocyte, such as mast-myelocyte or myeloblasts of Ehrlich and Naegeli. Against this view is the fact that they possess no nucleus; that they do not in the slightest degree resemble any of the coloured plates given by Ehrlich and Lazarus of the pathological forms of leucocytes just mentioned; and that during a prolonged period—some 20 years—in which I have been engaged in examining blood from various pathological conditions, notably the various forms of leucocythæmia, pernicious anæmia, aplastic anæmia, &c., I have never met any structures that have the slightest resemblance to these bodies.

Assuming, therefore, that these peculiar bodies do not represent any altered form of the cellular elements of the body, are they of the nature of protozoa? Are they related at all to those structures known as Koch's blue bodies, or do they belong to that vague family of cell inclusions, the chlamydozoa? Koch's granules, blue bodies, or Koch's plasma kugeln are circular, oval, or somewhat irregularly shaped cells which stain by Giemsa a blue colour and are filled with coarse chromatin granules. They have been proved by Gonder to represent certain stages in the life cycle of Theilera parva, the parasite of East Coast fever in



Blue-stained granular bodies with red-stained structures in their interior. From a blood film preparation fixed with osmic vapour and absolute alcohol, and stained with Giemsa. Drawn with Zeiss' camera lucida. Note the variation in size and the different number of red-stained structures contained within each. A granular body bursting and discharging its contents is seen at the lower left margin. A leucocyte and red blood corpuscle are drawn to show relative sizes of the granular bodies.

cattle. Gonder states that on an average the agamonts measure about 10 to 12μ, rarely 12 to 15μ. These structures are found in the internal organs of animals suffering from East Coast fever and a disease affecting calves in Uganda called by the natives Amakebe. They are seen in the spleen, lymphatic glands, bone marrow, and liver, but shortly before death they may sometimes be found in the circulating blood.

I find that the granular bodies that I have met with in the blood of this case of blackwater fever have some resemblance to Koch's bodies, but the chromatin granules in the latter are larger, more distinctly seen, and almost always more circular than the somewhat similar bodies I have described.

Against the theory of the relationship of the granular bodies to Koch's blue bodies is the fact that they were not associated with the presence of any definite piroplasms, unless the exceedingly small and ill-defined bodies which I have described in some of the red cells be regarded as of this

nature. On the other hand, it is possible that these peculiar bodies are of the nature of the chlamydozoa of Prowazek, a class of vague "organisms believed to be the cause of certain diseases of man and animals."

In conclusion, I would point out that possibly the peculiar granular bodies found in such small numbers in the circulating blood may be present in large numbers in the internal organs of cases of blackwater fever, and that they only reach the peripheral blood at the end of life. I would, therefore, suggest that those observers who come in contact with numerous cases of blackwater fever should examine smear preparations obtained during life by puncturing and aspirating a lymphatic gland, and in fatal cases have smears made from the spleen, bone marrow, lymphatic glands, and liver, to see whether analogous bodies can be found.

Bournemouth.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SPECIAL MEETING OF FELLOWS.

Continued Discussion on Alimentary Toxæmia.[1]

A MEETING of the Fellows of the society was held on April 28th, Sir FRANCIS H. CHAMPNEYS, the President, being in the chair.

Dr. WILLIAM HUNTER, re-opening the discussion, said that the subject matters of the discussion practically covered the whole series of processes which had been the special subject of his interest and investigations during the past 30 years. In the course of his studies relating to the nature of "pernicious anæmia" he had practically spent the greater part of his time in exploring in all their depths the muddy waters of the intestinal processes now brought under review. As the first and most important outcome he was enabled after three years experimental and pathological work to trace back this great anæmic disease to destructive (hæmolytic) changes affecting the blood in the portal system, induced by some special hæmolytic poison reaching it from the intestinal tract. These studies had founded and formed the basis of what had come to be termed "the doctrine of the enterogenous origin of severe anæmias," or "the toxic hypothesis" of the origin of these anæmias associated with his name and work. But although termed a "doctrine" or "hypothesis" his own work was an actual interpretation of the facts which he had ascertained experimentally—viz., that the blood changes of the disease he was studying could only be produced by special poisons which he employed. Further investigations as to the site of the lesions and the source of the infection which produced these particular hæmolytic toxins led him eventually step by step from the intestine to the stomach and finally to the tongue and to the discovery in these three organs of the infective lesions which always underlay this grave and mysterious disease. But they had also led him for the first time to recognise the far-reaching importance of the glaring septic lesions in the mouth—termed by him "oral sepsis"—as the greatest cause of infective disease in the body, and the chief cause of most of the disturbances in the alimentary tract, generally classed as toxæmic. Whatever rôle toxæmia—apart from lesions of the gastro-intestinal mucosa—played, either in health or disease, from an etiological, pathological, clinical, and practical point of view it was much more important to recognise that definite infective lesions, which were easily recognisable and in many cases could be easily dealt with, underlay nine-tenths of the disturbances of the alimentary tract which were termed "toxæmic." Dr. Hunter proposed, as his chief contribution to the day's discussion, to show by means of the epidiascope all sorts and sizes of oral streptococcal sepsis, which he would designate "the shark of the intestinal tract," and the multiple effects which it produced not only in that tract but elsewhere. He hoped he would thereby make it clear that to describe such gross and obviously septic lesions of the mouth as he then showed under the euphemistic and belittling title of "toxæmia" was as illuminating and as helpful as if one applied the term "toxæmic" to a foul septic knife or sponge. The sharpest and broadest distinctions existed and should be drawn between processes in the mouth and processes in the gastro-intestinal tract in relation to the subject of "intestinal toxæmia or auto-intoxication." The mouth processes were not toxic in their character; if they had been so Nature would have provided for it by connecting up the mouth with the portal circulation. The toxicity of the gastro-intestinal processes, on the other hand, was a great physiological fact. The portal blood was always toxic even in health; the liver was the great antitoxic and excretory organ of the portal circulation just as the kidney was the great excretory organ of the general circulation. This toxicity was not an accident, nor did it depend on any one product of gastric or intestinal digestion. All attempts to connect it with any such product had, in his opinion, been futile. Far more conclusive evidence of the natural toxicity of the portal blood was presented every day in the facts of disease—in the disturbances connected with inefficient activity or actual disease of the liver. The most common evidences of portal toxicity were, in his judgment, those presented daily in surgical practice in the phenomena of the sickness, vomiting, headache, and sense of illness following the administration of anæsthetics, more particularly after prolonged administration. These were not due to the poisonous action of the anæsthetic *per se* on the nervous system, nor yet to the presence of food in the stomach or intestine; they were the direct result of the depressed activity of the liver cells induced by the anæsthetic and the consequent imperfect detoxication of the portal blood passing through the liver. If the energy of the liver cell (already depressed by disease and intensely aggravated by the unsound clinical practice of withholding food unduly from the patient prior to operation) completely failed, it became in consequence the victim of its own digestive ferments and its own self-digestion with resulting acute fatty degeneration and acute necrosis. The portal blood passed unchanged into the general systemic blood, producing the fulminating toxic disturbances of continuous sickness, vomiting, hæmatemesis, delirium, and coma, which characterised post-chloroform poisoning. Precisely the same phenomena producible experimentally (in Eck's fistula) by connecting up the portal vein directly with the inferior vena cava. He divided the causes of portal toxicity in health and disease into two classes—(1) non-infective causes, the various products of digestion formed by the ferments of the gastric, pancreatic, and intestinal digestion; and (2) infective causes, the various products formed by the action of bacteria on the food products, which were far more important as a cause of natural portal toxæmia. In health the chief and most abundant were those of the coli group. The degree of putrefaction varied according to the amount of proteid in the food, on the one side, and according to the abundance of coli on the other. The provision made by nature for due regulation of the latter was: first, the daily removal of the mass of excrement, alike of food and of organism in the fæces; and secondly, the provision of protective mucus which lined the whole gastro-intestinal tract, and of protective muscular movements which kept the whole gastro-intestinal contents in more or less continuous movement. In short, they were being continuously "moved on." Chronic constipation was therefore a highly unnatural condition and always a source of increased portal toxæmia. That it might exist in certain individuals as an almost permanent condition without apparently causing ill-health was solely due to the power and protective action of the liver. It was not any evidence of the comparative harmlessness of constipation *per se*, but only an evidence that some individuals possessed the cæcum and colon of an ox with the liver of a pig, capable of doing any amount of detoxication. The influence of the lactic acid group of organism in modifying the character and lessening the degree of putrefactive changes in the intestine was great and important. It had been investigated by him both by experiment and by clinical studies some 25 years ago, and recorded by him before the Royal Society (1890). The lactic acid group were the least harmful and most

[1] THE LANCET, March 15th (p. 754), April 19th (p. 1033), April 26th (p. 1163), 1913.

beneficent group of organisms in the alimentary tract. There were therefore, in his opinion, absolutely sound physiological, pathological, and clinical grounds for the use of sour milk in conditions of intestinal putrefaction. The third group of organisms present in the alimentary tract in health was the streptococcal group. It was always present, but little obvious in health, and probably playing nothing but a saprophytic part in the intestinal processes. But in the light of his experience it played an altogether different and mightily important part in disease. It was responsible more than all the other normal organisms of the alimentary tract for the various disturbances and lesions of that tract which underlay the clinical conditions generally termed "toxæmic." There was a great pathological reason for this—viz., that the streptococcal group, however few or harmless they might be, or appeared to be, had always an intense capacity for local invasion, for causing local lesions, and for persisting in such lesions when formed. They were always capable of taking advantage of any abnormal conditions, whether of the food or of the mucosa, and of becoming thereby not only saprophytic but actively pathogenic, both by increase in their number and by actual invasion of the mucosa. The best example of this was afforded in the case of the summer diarrhœa of children. Hence it was important to keep a close watch on the conditions that favoured the presence of streptococci or led to any accession of their numbers and virulence; and such conditions were pre-eminently furnished by the septic wounds of the mouth—the conditions termed by him "oral sepsis" (1900). They furnished a continuous supply of streptococci to the alimentary tract, lower down, much of it doubtless exterminated by the bactericidal action of the gastric juice, when the digestion was in progress. But much of it equally without doubt passed unscathed through the stomach, especially in the interval between meals and during the night when gastric digestion was at an end, into the intestinal tract, where it found everything ideal, short of this periodic removal by the peristaltic action of the bowel, for its propagation and persistence. He had endeavoured to fasten attention on the rôle played by streptococci in intestinal disturbances—looseness, diarrhœa, &c.—and lesions—e.g., congestions, inflammations, ulcerations, &c.—by giving to these disturbances and conditions the titles of "septic gastritis," of "septic enteritis" (meaning thereby streptococcal enteritis), "septic colitis," "septic proctitis," "septic appendicitis," "septic cholecystitis," &c. He thought the time had come when such etiological titles should be substituted for purely pathological titles, such as "gastric catarrh," "gastric ulcer," "intestinal catarrh," "mucous colitis," "ulcerative colitis," and still more for such vague names as "toxæmia." Oral sepsis, he continued, could, and frequently did, make the whole alimentary tract run red with disturbances to a degree which had more and more impressed him with its importance, and which had led him to recognise streptococcal sepsis and its results—viz., "oral sepsis," "septic gastritis," "septic enteritis," and "septic colitis," &c.—as one of the commonest and most important causes of disturbance throughout the whole alimentary tract. The reasons why the mouth was so important in relation to septic infections generally were as follows. The structure and function of the gums and teeth exposed them in a special degree to violence and to injury and to consequent contraction of septic wounds of the gums and periodontal membrane (periosteum of the bone socket). When infection took place it was from its situation particularly difficult to eradicate after it had got into the socket. It was then connected with bone tissue, and bone sepsis was far more virulent and toxic in its effects than sepsis of soft tissues. Lastly, these wounds were in direct relation to the systemic blood without any intervening detoxicating organ like the liver to arrest or modify the toxins which they produced or the extension of the infection into the blood. Oral sepsis was therefore a double-handed weapon of offence in relation to the blood. It could act on the blood directly, and constantly did so. But the continuous stream of streptococci which it propagated passed also over the tonsils and pharynx into the gastro-intestinal canal, where it modified the existing normal bacterial activities and produced in varying forms and degrees all the effects of congestion, inflammation, ulceration, which it produced in and around the teeth. These included acute, subacute, and chronic septic tonsillitis and pharyngitis; all degrees of adenitis; acute, subacute, and chronic gastritis, with formation of gastric erosions and ulcers; acute, subacute, and chronic congestions of the small intestine, appendix, cæcum and large intestine, and of the rectum, with and without ulceration; with or without formation of bands. All these conditions were obvious and recognisable, and could be seen in the specimens he showed.

Sir BERTRAND DAWSON said that the term "alimentary toxæmia" conveyed a definite clinical picture. That such a condition might be produced by colon block and stasis was clear, and that when produced it was curable by putting the colon out of action by short-circuiting was demonstrable. His criticism would be that Mr. Lane gave too great a prominence to motor defects. He (Sir Bertrand Dawson) thought that the question needed a broader basis. The gastro-intestinal tract from mouth to anus must be viewed as a whole and from two standpoints—the motor and the infective. Colonic block was not necessary to alimentary toxæmia, for it might equally well be caused by chronic infection, say of the gums, stomach, or appendix, and might be associated with diarrhœa and an empty colon. That the colon had become hopelessly diseased and could not be made a working structure was the chief indication for ileo-sigmoidostomy. The sequence might be in one case, infection—stasis; in another, stasis—infection. If an infection it might begin in the gums, tonsil, or stomach, and finally manifest itself in the appendix or colon, or the order of the infection might be reversed, and starting in either appendix or colon secondarily cause chronic infective gastritis with or without an ulcer. As regards treatment, he urged that all cases should be investigated from both the infective and motor standpoint. It would be a tragic result of the discussion if it were followed by a "fashion" for ileo-sigmoidostomy.

Dr. E. MELLANBY said: The aspect of the subject of alimentary toxæmia that I propose to deal with is the chemical one, for recently certain chemical substances have come under consideration which seem to throw some light on the subject, and are worthy of further investigation. Before proceeding with the consideration of these substances I think it is permissible, even if only because of the treatment they have previously received in this discussion, to suggest that we throw overboard one group of chemical substances which until recently has received the exclusive attention of chemical researches on alimentary pathology. I refer to the tryptophane derivatives and especially to indoxyl sulphate, the substances responsible for the indican test. I make this suggestion for two reasons: 1. That this substance, although it has been the cause of tremendous labours, including that of Herter and his co-workers and the Metchnikoff school among many others, has led to no results. No doubt the fact that its formation depends on several factors, of which intestinal putrefaction is only one, is the principal reason of the divergence of opinion on the subject. For myself, I may say that in order to obtain a urine which gives the best indican test for medical students, it has been my custom to get that of a case of cancer of the liver rather than of a case of marked constipation. 2. The indol derivatives are all relatively innocuous compared with other substances which can be obtained in the alimentary canal. From a positive point of view the group of substances which I think can be readily assigned a position of importance from the point of view of alimentary toxæmias are the amines produced by splitting off CO_2 from the proteolytic amino-acids by intestinal bacteria. The most important of these amines have been referred to by the opener of the discussion, and are parahydroxyphenylethylamine—the amine of tyrosine, isoamylamine, the amine of leucine, and β-imidozoethylamine, the amine of histidine. Research workers have recently been attracted to these substances in consequence of the discoveries of Barger and Dale, who first isolated them from ergot and worked out their pharmacological action. Their actions I need not dwell upon, as they have already been dealt with by Professor Dixon, but I may remind you that they are all very potent stimulants of plain muscle, and whereas p. hydroxy and isoamyl raise the general blood pressure, β-i. has a marked depressant action. That parahydroxyphenylethylamine and isoamylamine may be responsible for chronic symptoms of intestinal toxæmias such as arterio-sclerosis seems to have been proved by the work of Harvey, who produced marked arterio-sclerosis and

a renal condition resembling the large white kidney by giving small quantities of these substances by mouth to animals over prolonged periods. I must confess that these results are surprising, especially when one remembers the ease with which parahydroxyphenylethylamine is rendered innocuous by having its amine replaced by a hydroxyl group and then oxidised to parahydroxyphenylacetic acid by an isolated liver prepared with Ringer's solution, as has been shown by Ewins and Laidlaw. From the point of view of acute intestinal disturbances, β-imidazolethylamine must be considered. This substance was further isolated from the mucous membrane of the alimentary canal by Barger and Dale in their endeavour to identify it with the hypothetical substance of Popielski called "vaso dilatin." The mucous membrane of the intestine offered the best material for such research, for it has long been known that a watery extract of the intestine produced a very large fall of blood pressure and other toxæmic symptoms when injected into animals. In a paper on cyclic vomiting in children I stated that Twort and myself[2] had isolated a bacillus from the alimentary tract capable of splitting off a molecule of carbon dioxide from histidine and converting it into β-imidazolethylamine. Dale and Laidlaw had shown that injection of small quantities of β-i. caused, among other symptoms, marked diarrhœa and vomiting, and I suggested that the absorption of this substance into the blood stream from the intestine might be responsible for the exacerbations of symptoms in cyclic vomiting. Since this time Berthelot,[3] a Frenchman working in Metchnikoff's laboratory, has also isolated a bacillus from the intestine capable of carrying out the same action. This bacillus he has called the Bacillus aminophilus intestinalis, because of its power of attacking amino-acids. We make no such general claim for our bacillus, although there is evidence that it will attack some substances such as tyrosine and alanine. One other point where we differ from Bertrand and Berthelot most emphatically I wish to deal with. They say they can only isolate the bacillus from the intestinal contents of cases showing intestinal disorder and not from normal healthy animals. This is absolutely contrary to our experience, for we have never failed to obtain most potent histidine-destroying bacilli from any alimentary canal of normal animals that we have examined. One surmises, therefore, that Bertrand and Berthelot ascribe the symptoms of intestinal disturbances to this bacillus whenever it is present. Twort and I, on the other hand, think it is present in all alimentary canals, and that its products of activity only produce symptoms under special circumstances. The fact that Barger and Dale isolated β-imidazolethylamine from the intestinal mucous membrane of normal oxen supports the view that the bacillus is a normal inhabitant of the intestine. Its distribution is affected by the diet to some extent, for a cat that has lived on an exclusive meat diet has the bacillus higher up towards the duodenum than a cat on a milk diet. Since β-imidazolethylamine is present in the normal alimentary mucous membrane, the question arises as to why it lies in an apparently innocuous state without the production of symptoms, and also what would happen if there was an increased production of this substance in the intestine. The answer to the latter question seems clear. If minute quantities of β-i.—say 10 mgr.—be injected either intravenously or subcutaneously into a cat, then very marked symptoms of diarrhœa, vomiting, and general collapse appear immediately. If large quantities—i.e., up to 500 mgr.—of β-i. phosphate be given so as to obtain access to the small intestine—i.e., in keratin capsules—then the only symptom which follows is that of diarrhœa with watery, acid stools. But there is no vomiting and general collapse—in other words, the β-i. has acted locally on the alimentary canal producing greatly increased peristalsis, but it has not been absorbed into the blood stream to produce the more important toxæmic symptoms. Without suggesting that β-i. is responsible for all the symptoms of such an acute condition as summer diarrhœa and vomiting of children, although I think it plays an important part in such conditions, and may be regarded as typical of a larger group, it seems to me that the facts just related as to β-i. throw an important light on this condition. For it is clear that if β-i. is normally present in the alimentary canal, and if even when large quantities are present no general symptoms of poisoning are produced, then clearly it can only mean that when acute intestinal symptoms are produced they are due to the breaking down of the defensive mechanism of the intestinal mucous membrane which prevents the entry of β-i. into the blood stream. Such a view as this would imply that there are all the potential factors, including intestinal flora and toxic chemical substances, present in the alimentary tract of all normal animals, and that the difference between the summer diarrhœa child and the normal child is due to the breakdown of the absorptive mechanism of the intestine, and to that alone. Further evidence to this effect—viz., that the factor of importance to be considered is the absorptive mechanism and not an excessive production of toxins in the intestine—is the fact we showed that β-i. is never produced from histidine in the presence of carbohydrates and acids. Also, the acid fermentation of carbohydrates in acute intestinal disturbances is notorious, and it is unlikely that there is any production of β-i. at such times. The acid fermentation products are themselves relatively innocuous. This view would further point to a different line of inquiry for the elucidation of alimentary toxæmic conditions than that usually undertaken. For it suggests that the key to the situation is not held by a consideration of the bacteria of the intestine or of the chemical end-products of bacterial action, but rather by knowledge as to the normal method of intestinal absorption, and more particularly of the mechanism which prevents the passage of toxic substances across the mucous membrane into the bloodstream. The important question is, What is the cause in acute intestinal disturbances which brings about the breakdown of the defensive mechanism and allows the entry into the bloodstream of toxic substances? All research on this subject is handicapped by the fact that from a physiological point of view the process of intestinal absorption is almost a virgin field. The general trend of modern physiological research work on the alimentary canal seems to me to indicate another method whereby pathological symptoms may be traced to the intestine. In the first place we had Bayliss and Starling's striking discovery of secretin—a substance liberated from the duodenum by HCl of the gastric juice, and so causing pancreatic activity. The detection of gastin followed this—a substance in the pyloric end of stomach mucous membrane which was liberated into the bloodstream by various substances, including meat extract, and caused a further secretion of pepsin and HCl by the fundus mucous membrane. Again, quite recently, the results recorded by Low of work done in Hans Meyer's laboratory indicate that water taken by mouth acts as a diuretic, not by its direct action on the kidney, but indirectly by liberating some substance from the alimentary tract which stimulates the kidney to secrete water. He showed that a watery extract of alimentary mucous membrane injected subcutaneously caused marked diuresis in dogs, and if the extract was boiled it lost its diuretic effect. Such results as these, which prove the presence of chemical stimulants in the alimentary wall, make one wonder whether a generalisation is possible, so that each organ in the body is stimulated to activity by some specific chemical substance present in the intestinal mucous membrane, each specific stimulating substance being liberated by a particular foodstuff. If such a premise is correct it is clear that all sorts of symptoms might arise when an excess or a deficiency of the specific chemical stimulants is liberated into the blood stream in consequence of abnormal intestinal putrefaction or other disturbance. Work based on such a hypothesis might be useful in elucidating the causal relationship between some of the more obscure pathological conditions—as, for instance, diabetes—and the alimentary canal.

Dr. ETTIE SAYER said that her contribution to the discussion was evoked by Dr. Hale White's remark that "alimentary toxæmia has never been produced experimentally." It seemed important not to omit reference to any therapeutic procedure which involved the risk of producing the condition accidentally. One of such procedures was the attempt to reduce a raised blood pressure by means of high-frequency currents in cases of chronic autointoxication during periods of constipation. An excessive absorption of entero-toxins might be set up which would not only send the pressure higher, but might also produce an acute exacerbation of toxæmia. Dr. Doumer, of Lille,

[2] THE LANCET, July 1st, 1911.
[3] Comptes Rendus de l'Académie des Sciences, July 24th, 1911.

first pointed out that the absorbent cells of the alimentary tract naturally shared in the general increased chemical activity, and that if the bowel was loaded with retained matter which had undergone bacterial, and possibly putrefactive, changes there would be a correspondingly increased absorption of entero-toxins. Dr. Sayer said that she had never seen so severe a case of simple constipation and toxæmia that it necessitated the removal of the colon, but had come across a considerable number which after resisting all drug treatment had yielded to electricity. The forms most frequently indicated were either static or galvanic. Static wave currents, or in very severe cases static induced currents, were indicated in atonic or debilitated cases where there was want of muscular power, characterised either by ptosis or by dilatation of any of the organs, and especially where local symptoms preponderated over those of systemic toxæmia. Galvanic currents acted more particularly by ionisation, and were employed when it was desired to affect the mucous membrane and secretory cells rather than the muscular coat of the intestine. When toxæmia preponderated over local symptoms she had found a combination of high-frequency, radiant light baths and massage the best treatment. For bad local patches of fibromyositis ionisation with lithium iodide gave most relief. In cases of auto-intoxication where the blood pressure was raised, high-frequency treatment had its most important value. She would like to concur with those who considered that a healthy colon was much better than no colon. Before being subjected to its removal patients ought to have a guarantee that every resource of conservative medicine had been exhausted on their behalf.

Dr. J. SIM WALLACE said: Alimentary toxæmia is due to certain abnormal conditions giving rise to undue lodgment and proliferation of micro-organisms and defective elimination or control of the toxins generated. We may further say in general that these conditions are induced or predisposed to by lack of function in or near the situation where the toxins are produced. Upon recognition of the natural or physiological methods of control of the bacteria and the toxins produced can we best base a scientific and practical treatment. The chief function of the saliva is to keep the mouth in a hygienic state, to remove food which by stagnating would undergo fermentation or putrefaction, and to control the products of fermentation sufficiently thoroughly to prevent injury to the teeth or mucous membrane of the mouth. The mucous coating over the teeth prevents acid foods from doing them harm, and if a meal be finished with due regard to the hygiene of the mouth—e.g., with fresh fruit—the mucous plaques are (according to Professor W. G. Gies) disorganised. Thus, then, their removal, together with adherent bacteria and food particles, is facilitated. Lack of function predisposes to alimentary toxæmia. The primary function of the teeth is the mastication of food, but the mastication of food of a detergent nature has a second function—namely, the prevention of the undue stagnation of bacteria and food débris about the teeth. The earliest effect of such stagnation is a slight inflammation of the gum margins surrounding the necks of the teeth—that is to say, where from lack of function the greatest amount of stagnating bacteria and food débris is located. When the stagnating bacteria and débris at the necks of the teeth give rise to toxæmic symptoms a rarefying osteitis may be set up, especially when, through lack of function, the ligamentous tissue and the alveolar processes are weak. The rational treatment, then, of oral mal-hygiene is the restoration of the normal function of mastication, and the stimulation of the self-cleansing processes of the mouth. In addition to food requiring efficient mastication, it is desirable to insist, as far as may be possible, on a reasonable supply of food containing a certain amount of acid, for this promotes the cleansing function of the saliva and mucus most effectually. Acids call forth a copious flow of saliva rich in ptyalin. There need be no fear of the acid in fresh fruit or vegetables injuring the enamel of the teeth; this is amply provided against by the mucous coating on the teeth and a copious flow of alkaline saliva. Furthermore, the after-flow of saliva under such a *régime* clears the mouth not only of stagnating food particles and bacteria, but also washes away the disorganised mucus. Remarkably excellent results are obtained by the ordinary surgical procedures, provided always that these artificial procedures are more or less consistently supplemented by a dietetic *régime* which stimulates the functional activity and self-cleansing processes of the mouth. When we turn to a consideration of alimentary toxæmia beyond the mouth, we note a general similarity in causation—i.e., insufficient motor activity of the stomach and intestines and insufficient or perverted secretion of the bile. It is of the greatest importance to take into consideration the fact that "although itself without bactericidal property the bile nevertheless checks intestinal putrefaction—(*a*) by exerting a selective influence in favour of certain organisms, such as the colon bacillus, to the disadvantage of the anaerobic promoters of putrefaction; (*b*) by inhibiting the secretion of the bacillary ferments; and (*c*) by stultifying the action of these bacterial ferments on putrescible material." Moreover, the bile "countervails the effects of the toxic products to which the intestinal bacteria give rise" (H. Roger). I am convinced that if a tenth part of the attention had been paid to the value of food from the point of view of alimentary hygiene that has been paid to its nutritional value, the treatment of alimentary toxæmia would have been far more rational and satisfactory than it at present is.

Dr. W. BEZLY THORNE drew attention to the fact that 17 years ago he had delivered an address on self-poisoning and heart disease which had been published in THE LANCET under that title.[4] He was now more than ever convinced of the intimate connexion between the two conditions. Without minimising the importance of pyogenous and other toxins, he contended that the main cause of toxæmia as affecting the circulatory organs was alimentary in origin. He expanded his views as follows. Normal fæcal matter was not toxic, and might be retained for two or more days with only unimportant discomfort. Fluid stools, if of frequent or habitual occurrence, were always toxic. Habitually pale stools were toxic, as they represented interference with the flow of the biliary and pancreatic juices, a condition prohibitive of the normal biochemistry of digestion and necessarily involving morbific bacterial activity. The mucosa of the pelvic colon and rectum not being able to discriminate between a normal saline injection and fluid fæces, a man who frequently had fluid toxic stools, whether as the result of saline aperients or of a morbid condition, underwent rectal feeding on his excremental poisons. Such toxæmia conduced in a high degree to degenerative change in the myocardium and in the arterial tissues, especially the tunica media. Dr. Thorne proceeded to give instances in which careful dieting and intestinal correction had reduced maximal sphygmometric readings in the higher grades by 40, 50, and more mm. Hg.

Dr. H. G. ADAMSON said that the supposed relationship between skin eruptions and alimentary toxæmia had attracted much attention, but it was a subject about which we knew really very little. Eruptions of urticarial and erythematous type were of common occurrence after ingestion of certain food poisons. These were now regarded as phenomena of anaphylaxis to foreign proteids. But they were, strictly speaking, not the result of alimentary toxæmia in the sense in which it was being used in this discussion, and he knew of no eruption which could be definitely traced to the bacterial flora of the alimentary canal, or to any known chemical body produced there. The theory that various skin diseases supposed not to be of microbic origin, such as eczema, psoriasis, lichen planus, pemphigus, scleroderma, lupus erythematosus, and alopecia areata, were the results of toxins produced in the alimentary canal had some attraction, but we had no facts to support it. And the results of attempts to prove absorption of chemical products from the intestine by estimating the amounts of ethereal sulphates and aromatic bodies in the urine had been inconclusive. It seemed probable that if such bodies existed they were immeasurable by ordinary chemical methods, and that we had to look to bio-chemistry for their discovery.

Dr. R. MURRAY LESLIE said that putrefactive changes in the intestines of healthy persons under normal conditions produced no evil results whatever, and probably fulfilled a most useful rôle in the animal economy. In the great majority of instances the protective mechanism of the healthy organism was more than sufficient to counteract the deleterious effect of any toxins that might be produced by the various bacterial

[4] THE LANCET, March 21st, 1896, p. 755.

flora that normally inhabited the gastro-intestinal canal. In the course of evolution the human host had adapted itself to the presence of those bacteria which had selected the intestinal canal of man as their normal habitat. Should, however, the vital protective forces be at a low ebb from any cause, or should the intestinal flora as the result of stasis or other cause be abnormally numerous or consist of abnormal types, or should they invade portions of the intestinal tract remote from their usual habitat, then symptoms of alimentary toxæmia would sooner or later ensue. In the discussion sufficient stress had not been laid on the first of these two factors—viz., the power of resistance on the part of the individual. The different effects of constipation on different individuals illustrated the importance of this point. Habit tolerance alone did not altogether account for those differences, and there were undoubtedly individual idiosyncrasies in respect of liability or resistance to alimentary toxæmia. Evidence was accumulating that the specific action of the thyroid, genital, and other ductless glands played an important part in regard to the vital resistance to the action of alimentary and other toxins. Dr. Leslie found considerable benefit accruing from the giving of various extracts containing the products of internal glandular secretions. It was, however, with the second factor—namely, the increased quantity or virulence of the alimentary toxins—that they had been principally concerned in the present discussion, and it was of paramount importance to decide which were the conditions in the alimentary tract that predisposed to increased production of such toxins. The bacteriological evidence brought forward pointed unmistakably to intestinal stasis as being pre-eminently the condition favouring such production. There was not only increased bacterial multiplication, but abnormal intestinal flora, while the prolonged retention of the bowel contents offered special opportunities for undue fermentative activities of the bacteria and for the absorption of their toxic products. The effect of the stasis also tended to cause upward spread of the coliform and other bacteria into the small intestine, the mucous membrane of which was much more absorptive than that of the colon. The most characteristic of Dr. Leslie's cases of alimentary toxæmia had all been associated with visceroptosis and intestinal stasis. It was evident from the observations of several of the speakers that the actual quantities of indican and skatol—comparatively inert substances—that may be found in the urine must not be accepted in any sense as a criterion of the degree of alimentary toxæmia present in any individual case. The degree of toxæmia should for all practical purposes still be judged by the intensity of the clinical manifestations, while bacteriological and chemical investigations were principally of service in indicating the nature and source of the toxæmia. There was much evidence in favour of the view that many so-called blood affections, such as pernicious anæmia and Henoch's purpura, were in reality manifestations of alimentary toxæmia. He (the speaker) was a strong believer in the existence and importance of the various peritoneal adhesions and kinks described by Mr. Lane and others. The interesting evidence produced by Professor Keith in regard to the formation of peritoneal adhesions in the human embryo as early as the third or fourth month of intra-uterine life did not in any sense contraindicate the formation of similar structures in post-natal and adult life. The antenatal adhesions, many of which were only found in the case of man and the anthropoid apes, were doubtless developed to prepare the animal for the upright posture, while the post-natal adhesions were also connected with the assumption of the erect attitude, but were developed so as to counteract gradually the increasing weight of the abdominal viscera, particularly the cæcum and colon, which tended to get overloaded with solid and semi-solid contents. He had frequently witnessed X ray and operation demonstrations of these adhesions in the case of his own patients, and had almost invariably found the adhesive bands in the direction of the lines of resistance to vertical downward displacement. Patients with symptoms of chronic alimentary toxæmia, associated with stasis, if left untreated, were extremely apt to relapse into a condition of physical and mental asthenia and chronic invalidism and were further peculiarly liable to intercurrent acute and chronic disease. Treatment of some kind must be initiated to redress the balance of opposing forces—the vital resistance on the one hand and the degree of toxæmia on the other. The vital forces might be stimulated by hygienic, dietetic, and other remedies, by vaccine and enzyme therapy, and by the giving of various glandular extracts containing the products of internal secretion. The production of bacterial toxins must be diminished and their elimination facilitated. In early cases simple remedial measures, such as diet modifications (particularly reduction in animal proteids and the substitution of vegetable and purin-free diet for a certain period); aperient remedies and lubricants, particularly liquid paraffin; abdominal massage; supporting belts and physical exercises, were usually quite efficacious. It would be observed that most of these methods favoured elimination of toxins by relieving intestinal stasis, and although mere association of stasis with toxæmia did not, as Dr. Hale White stated, prove causation, still it was surely more than a coincidence that the toxæmic symptoms often entirely disappeared when the remedial methods adopted had removed the stasis. Petroleum should often be given in large doses—e.g., ½ to 1 oz. taken two or three times daily. In the speaker's experience intestinal stasis was much commoner in private than in hospital practice, and he attributed this fact to injudicious diet and habits on the part of the better classes. The substitution of a two-meal diet for the three-meal diet of to-day would probably be a great advantage. There was, however, a minority of aggravated cases with progressive emaciation and debility, and other symptoms threatening the life of the patient, where dietetic, lubricant, hygienic, and other simple measures, however carefully carried out, would fail, and his experience of a considerable number of such instances had led him to advocate strongly having recourse in these circumstances to surgical interference, with the object of removing the poison manufactory, which was usually in the colon and terminal portion of the small intestine. By far the most satisfactory surgical measure was that of short-circuiting the ileum into the pelvic colon, thus throwing the greater part of the large intestine out of action, and thereby enormously accelerating the passage of the intestinal contents. In such cases it was not only unreasonable, but also inimical to the patient's best interests to refuse to resort to operative interference. In Dr. Leslie's experience it had been those cases of visceroptosis, where the cæcum and other portions of the large intestine were bound down by adhesions below the level of the brim of the true pelvis, that simple non-operative measures often failed to give permanent relief. If there was a controlling mechanism at the ileo-cæcal opening, as suggested by Dr. Elliott and others, this would be specially apt to be interfered with in such instances, while this condition would also predispose to the formation of kinks. In most of his cases in which simple measures had entirely failed to give relief, and recourse had been had to a short-circuiting operation, accompanied in one case by colon resection, the resulting benefits had been little short of marvellous.

Mr. J. LEWIN PAYNE said that the chronic nature of the complaints associated with alimentary toxæmia was largely due to the fact that a vicious circle was established, and when once oral sepsis had led to gastro-intestinal troubles the oral sepsis itself might be kept active by the secondary complaint. The amount of sepsis arising directly from dental caries was probably small, but indirectly it led to many infective processes. Pyorrhœa alveolaris was the commonest scurce of infection in the mouth. Dental caries and pyorrhœa alveolaris were seldom both well marked at the same time, which might be explained on the ground that caries was caused by fermentation and the production of acids, whereas pyorrhœa was a putrefactive process. He doubted whether direct absorption of organisms and toxins occurred in the mouth, through the gum, periodontal membrane, or alveolus in cases of pyorrhœa alveolaris. The chief source of infection appeared to rise from swallowing unmasticated and contaminated food. The restoration to normal activity of the mouth and teeth was an important factor in the treatment as well as in the prevention of alimentary toxæmia. Probably the chief influence in reducing the functional activity and masticatory force was the diet. He believed that pyorrhœa alveolaris was a curable disease, and the proportion of cases which could be cured without extraction was increasing. He felt strongly that by recommending wholesale sacrifice of teeth they were shirking the problem which faced them, and was convinced that the dentist of the future would not rest satisfied with that attitude. He spoke in favour of vaccines.

Dr. R. ACKERLEY spoke of the importance in this connexion of certain habits of civilised life and ways of dealing with food leading to imperfect insalivation. No serious attempt was made to teach young children the method of insalivation. Only by active sucking was any appreciable quantity of saliva obtained. He suggested that saliva had anti-bacterial action, and also improved digestion and absorption of food. The chief cause of abnormal conditions of the mouth was absent or imperfect insalivation.

Mr. S. F. ST. J. STEADMAN said that he thought that no one who had studied the etiology of pyorrhœa alveolaris could possibly support Mr. Arbuthnot Lane's theory that it was secondary to intestinal stasis. Pyorrhœa alveolaris was brought about by the lodgment and subsequent decomposition of carbohydrate and other soft sticky food clinging around and between the teeth. If Mr. Lane was correct in supposing that it was secondary to intestinal stasis, due to man's upright posture, how did he explain its occurrence in the domestic animals? It was common in all animals subjected to the will of man—i.e., when their natural diet of raw uncooked food was replaced by sticky carbohydrate food. He agreed with Mr. Goadby that the toxins absorbed by the blood stream in close contact with the areas of rarefying osteitis in the jaws was even more important than the mere swallowing of pus. He could not, however, agree with his vaccine treatment of pyorrhœa alveolaris. He had watched Mr. Goadby's work for some time, and was bound to confess that he was not able to corroborate the results he claimed. He had not been able to detect improvement either in the local condition or in the constitutional symptoms in those cases where no local treatment had been carried out. Where such treatment had been carried out there was sometimes an improvement, but he thought that was due to the local treatment and not to the vaccine. He pointed out that in the majority of cases, even when great care was taken to prevent outside contamination, a swab taken from the pockets nearly always showed a mixed infection. It was extremely difficult to determine which organism was the cause of the trouble in each individual case. The only way at present was to take the patient's opsonic index to each organism isolated, and the result obtained was at present unreliable. He thought that, in view of the fact that hundreds of teeth were being extracted for pyorrhœa alveolaris each week without any ill-effect from the operation and without a previous course of vaccine, Mr. Goadby's statement that a course of vaccine treatment before operating was essential for fear of dangerous constitutional symptoms could not be accepted. He had himself performed this operation of extensive extraction a great number of times, and had not seen any ill-effect if care was taken to render the area of operation as clean as possible before operating. He agreed with Mr. Goadby that extraction of the teeth for pyorrhœa was a confession of failure, but the same could be said of the surgeon who removed a leg for sarcoma. An honest confession of failure was often the best course in the interest of the patient. It was no advantage to a man to save either his teeth or his leg and lose his life. He thought that though an educated person who was able to give a considerable amount of time and trouble to the cleansing of the mouth could sometimes arrest the disease, it was incurable in the poorer classes once it was established. He thought that considering the risks such patients ran of becoming chronic invalids, and consequently being constantly among the unemployed, and realising the hardship this caused among their dependents, it was a grave offence against the patients and the community to allow them to retain their teeth without clearly placing these risks before them.

SECTION OF MEDICINE.

Gout and Chronic Rheumatism.—Ambulatory Treatment by Means of Tuberculin.

A MEETING of this section was held on April 22nd, Dr. FREDERICK TAYLOR, the President, being in the chair.

Dr. H. LYON SMITH read a paper on Gout and Chronic Rheumatism, their Etiology from the Bacteriological Standpoint, and some Notes on Treatment. It was based upon observations made over a period of three years on nearly 200 cases, which had been differentiated clinically and referred to as gout or chronic rheumatism respectively, yet presented many points in common. Both types were examined from the bacteriologist's point of view as if they were infections of a chronic nature, and there was a close resemblance in the findings. The conditions common to both included arthritis, single or multiple, periarthritis, aponeurositis, neuritis or perineuritis. The associated chronic lesions which served as foci of infection—e.g., pyorrhœa, chronic pharyngitis, post-nasal catarrh, bronchitis, gastro-intestinal catarrhs, urethritis, cystitis, pyelitis, vaginitis, endometritis, salpingitis, and some forms of dermatitis—were briefly referred to. The importance of early recognition of marginal gingivitis as a precursor of pyorrhœa alveolaris, with its attendant arthritic troubles, was insisted upon. The commoner pathogenic microbes concerned in chronic inflammatory conditions and associated with gout and chronic rheumatism, such as the streptococci, staphylococci, the bacillus coli group, pneumococci, bacillus influenzæ, the diphtheroid group, gonococci, micrococcus catarrhalis, B tuberculosis and micrococcus melitensis, had been found in certain cases to play leading rôles, but the majority of cases were due to mixed infections. This augmented the difficulty in treatment as the immunising process necessarily became much more complicated. Where it had not been possible to use exact diagnostic methods, such as the opsonic index, &c., frequent bacteriological examinations of pathological exudates had been made and the clinical responses to tentative inoculations had usually been quite significant. He referred to an unusual type of case, in which the diphtheria bacillus appeared to be the source of trouble and antitoxin was used with striking results, and to some illustrative cases in which a marked alleviation of symptoms was obtained by inoculation methods falling far short of complete immunisation. It was impossible to summarise or dogmatise on such a subject. Its protean aspects suggested a protean etiology. It seemed to be agreed that alimentary toxæmia was the probable source of the various symptoms designated gout or chronic rheumatism. It could be demonstrated that the ferments produced by certain bacteria acting upon various foodstuffs, besides causing the bewildering cleavage of proteins, hydrocarbons, and carbohydrates, could give rise to the formation of various organic acids—e.g., lactic, acetic, butyric, hippuric, and oxalic. It hardly seemed logical to cut down any one section of the diet table in the hope that by starving the host we might kill the parasite. A more rational procedure was to aim at raising the specific immunity of the host to whichever pathogenic bacteria appeared to beset him most actively, taking for our models methods which had successfully produced immunities in the research laboratories.

Dr. T. D. LISTER read a paper on the Treatment of Ambulant Cases of Pulmonary Phthisis by Tuberculin (T.R. and B.E.) in the out-patient room. He said that several disadvantages attended on the attempt to carry out tuberculin treatment in a small out-patient department in a special hospital. This arose partly from the difficulties of the patient and partly from those due to intermittent observation. After a few years' experience of administration of tuberculin in the wards, he started giving it to out-patients. The first difficulty was to decide what observations it was possible to make. Apart from the temperature chart and the general condition of the patient in relation to his physical signs truly scientific observation seemed impossible without a special department and a large number of highly qualified helpers. Not every out-patient had the intelligence to take his temperature accurately, and the directions given must necessarily be as simple as possible. His instruction was for patients to take their temperature by mouth on waking in the morning, usually about 7 o'clock, before taking food or drink, and in the afternoon one hour after tea. The thermometer was supplied for a few pence from the hospital dispensary; the charts, which lasted six weeks and were replaced when completed, were distributed in the consulting-room. When the patient's temperature was not verified by a medical man or district nurse one could judge only by internal evidence as to the patient's accuracy. If doubt arose no treatment was begun until the patient could get further instruction or assistance. The charts were kept for some weeks before he felt justified in beginning the administration of tuberculin. The weekly interval did not afford the most scientific method of administering tuberculin. In the wards, where patients were under continual observation,

doses could be spaced with a better regard to negative and positive phases in so far as these might be inferred from the temperature chart. Difficulties also arose from irregular attendance under certain conditions of employment, from temporary migration, and from varying ability to secure adequate nutrition, in the same patient. Therefore when reactions (which he endeavoured to avoid) occurred there was not the same control over the patient as in the wards of a hospital or sanatorium. Some patients, however, took a very intelligent interest in their treatment and rested as directed immediately on any rise of temperature. For these and other reasons the out-patient treatment of pulmonary phthisis by tuberculin could be carried out with any justice to the patient and one's self in only a limited number of cases, but for this limited number of cases it was useful, justifiable, and expedient. In the selection of cases for tuberculin treatment in an out-patient department there was even a greater need for care than in making the selection for the sanatorium. As immunising ability depended on the active condition of the blood and tissue cells, nutrition was an essential point. He endeavoured to ascertain that the patients could obtain adequate food, however simple. He was equally confident that the unfavourable results which he had seen in certain cases were due to failure of nutrition, and that the favourable results seen in many other cases were due to a supply of proper food. He was not convinced that with simple instruction in the hygienic treatment of phthisis some of the latter patients would not have got well without tuberculin. He also took into account the patient's general physique. The kind of physical signs found in an infective disease producing gradual destructive changes he thought of less importance than the manner in which the organism sustained the infection. A limited severe lesion, and chronic fibrosis, even with a cavity, was to be preferred to a diffuse infiltration and subacute symptoms. The modern delicacy of diagnosis in so universal a disease must result in the detection of many cases which got well. The feature of the modern literature on tuberculosis was the establishment of the theory that nine-tenths of our population recovered from infection by tubercle. The relation of general infection and of the possible immunisation of the population to the gradual reduction in the phthisis death-rate demanded further consideration. How the patient stood the disease while untreated was an important factor in estimating his ability to benefit by tuberculin treatment. One must decide as to each case on its merits; a case with old physical signs of fibrosis, including cavitation, might be quite suitable, especially if the relapsed area was of limited extent and the constitutional symptoms were favourable. With a temperature chart normal or only slightly irregular, of limited daily range, and with nutrition fairly maintained or capable of improvement, and with no prognostic adverse factors present—poor physique, extreme poverty, bad family history, rapid pulse, and severe anæmia—one might safely begin. He had been accustomed to point to a primrose tint in the soft palate, with general anæmia of the buccal mucous membrane, as indicating cases which did not usually do well. Tuberculin treatment could be carried out in a very much larger number of cases where there was entire control over the patient than in the out-patient room. Treatment was begun only after some weeks of observation, except in cases returned to the out-patient room from the wards. From the commencement of the chart the patient was questioned as to the accuracy and care with which his chart was kept; his weight was watched, his sputum examined, and ordinary medical treatment adopted. His usual commencing dose was 0·00001 to 0·00002 of a milligramme of T.R. The first dose was rather experimental, and out-patients were especially cautioned to register their temperature carefully during the first two or three days after the dose, to tell him anything special they might notice about themselves after the injection, and to rest in bed for, at any rate, the first 24 or 36 hours should their temperature go up or should they feel ill after an injection. As a rule with the small dose indicated there were no initial reactions, nor did the patient notice any subjective symptoms which might be regarded as such. At the next visit if there was no reaction of either kind the dose was increased, usually to 0·00003 mg. All being well the dose would again be increased at the next visit to 0·00004 or 0·00005, and in succeeding weeks the dose would go up to 0·00007 and then to 0·0001, and so on until in the twenty-fourth week 0·5 would be reached. Unfortunately, a great deal of unsatisfactory and even dangerous tuberculin administration was now being carried on. Series of doses were prepared by commercial firms and issued to practitioners, who administered them with an inadequate regard to their toxicity. Tuberculin was a toxin, not an antitoxin, a fact that was often ignored in practice, and a strong protest against the present indiscriminate application of tuberculin in many forms of tuberculosis was necessary. A rise of temperature following a dose contra-indicated an increase at the next visit, and if it remained disturbed on the evening before the next visit it was advisable to omit the dose, even though this course in an out-patient involved an undue prolongation of the interval. On the following week, if the temperature was normal, the previous dose might be repeated, and if on the succeeding visit the temperature had remained normal, a progressively increasing dosage might be resumed. But should the repetition of the previous dose again be followed by a reaction it might be necessary to diminish the dose at the next visit, but no dose should be given after a reaction until the temperature had been quite normal under the ordinary conditions of the patient's life for several days. As the cost of T.R. rapidly increased when the doses approached a milligramme, and as the successful increase of dose without reactions up to 0·001 or 0·01 of a milligramme implied a considerable amount of tolerance on the part of the patient, he had in many cases commenced administration of B.E. at this stage. B.E. was much more toxic than T.R., and he did not think the administration of B.E. should be begun in the out-patient room with more than one-fifth of the previous dose of T.R. Thereafter progress in the increase of dosage would follow very much the same lines as those for T.R. If doses above 0·1 mg. of T.R. were tolerated with impunity the interval between doses might sometimes be increased. Usually he preferred to see these patients weekly even when no dose was given. When doses of 0·1 mg. B.E. were attained a fortnight might often be allowed to elapse, and when doses of one or two milligrammes were reached, the patient remaining well, the interval might be further extended to four or six weeks. He was unable to say when treatment should be discontinued. He had not taken any out-patients beyond the dose of two milligrammes of B.E. Where an apparently successful result had been obtained the patient was advised to come up at intervals of one to two months, to repeat the maximum dose which had been reached in his case. The after-care of all cases of pulmonary phthisis presented identically the same problem as that of the prevention of the disease. Economic factors had the largest place. He had as yet but little faith in the permanence of any immunity resulting from treatment of an attack of revealed or open tuberculosis by any method, but tuberculin treatment at least kept the patient under observation and guidance for a long period. The tuberculin used in his out-patient department was prepared by Dr. Hunt, pathologist to the hospital. It was sent in a series of decimal dilutions corresponding to 0·0001, 0·001, 0·01, 0·1, 1 mg. bacillary substance in each 1 c.c. It was diluted with 0·8 per cent. salt solution containing 0·5 per cent. carbolic acid, and heated to 58° C. for half an hour. The injections were usually made in the patient's arm (first washed with a lysol solution) over the outer head of the triceps or about the insertion of the deltoid. After the injection the puncture was dried and occasionally covered. The syringe was of glass, and the needles and syringe were sterilised in the ordinary manner. The doses were measured by decimal divisions of a c.c. in the syringe. A printed card of instructions as to hygiene and nutrition was given to every patient. He saw no reason for ceasing to give these patients concurrently the older remedies, but in regard to cough in ordinary cases of pulmonary phthisis he did not use derivatives of opium, and he found that liquorice and menthol pellets were usually sufficient to stop the cough when troublesome. Patients were also taught not to cough except for the purpose of expectoration. The patient rapidly acquired the power of distinguishing between the possibility and impossibility of removing sputum from his chest. His attitude towards tuberculin treatment in cases of ambulant phthisis in the out-patient room was at present rather one of investigation than of conviction. He would liken the patient's resistance to an elastic thread holding up a weight, which might be compared to the disease.

If such a weight were suspended by an elastic thread so that the thread, though moderately stretched, sustained it easily, and a tap were given to the weight, the thread was momentarily further stretched but subsequently rebounded, so that for a moment the weight reached a higher position than when at rest. If the elastic cord was strengthened at the height of rebound by an additional thread, and this process were repeated, we should arrive at a position where the cord would be too strong to be affected by further blows on the weight. Tuberculin treatment could be applied with benefit to those patients who possessed an "elasticity of resistance." The paper was illustrated by charts on the epidiascope, and by notes of cases.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Exhibition of Clinical Cases and Pathological Specimens.—Strangulated Inguinal Hernia in Infants.—Meningitis Simulated by Threadworms.

A MEETING of this section was held on April 25th, Mr. A. H. TUBBY, the President, being in the chair.

Dr. J. L. BUNCH showed two cases of Hereditary Syphilis treated by intravenous injections of salvarsan and neo-salvarsan. 1. A child, aged 2 years, who had been shown at this section some 18 months ago. Shortly after birth the child developed virulent symptoms of hereditary syphilis, and when eight weeks old was given an intravenous injection of 0·03 grm. salvarsan ("606"). A fortnight after the injection all the syphilitic symptoms had disappeared and the child had increased 4 lb. in weight and had remained free from symptoms since. 2. A child aged 3 months. When aged about five weeks he began to show symptoms of hereditary syphilis—rash, mucopurulent discharge from the nose, condylomata, &c. He was admitted to hospital on April 11th and a skiagram taken of the right wrist. This showed marked disease of the lower end of the diaphysis of the radius, with cancellation and rarefaction of the bone, and periostitis spreading well up the shaft and also involving the ulna. There seemed little doubt that these appearances were due to syphilitic disease. The Wassermann reaction was strongly positive. At 2 P.M. on April 12th, 0·04 grm. neo-salvarsan was injected into the left external jugular. At 10 P.M. on the same day the temperature rose to 103° F., but fell again next day almost to normal. The pulse rose from 120 to 136 at night. The injection of neo-salvarsan was repeated on April 19th, and the symptoms had all greatly diminished, with the exception of the bone changes. The mother still suckled the child at the hospital three times a day.

Dr. J. PORTER PARKINSON showed a case of Tuberculosis of Kidney. The patient, a boy aged 8 years, with a healthy family history, was admitted into a hospital for children two years ago, shortly after an attack of scarlet fever. He was sounded for stone in the bladder, and then the right kidney was explored from behind, but nothing abnormal detected. The urine, which had contained pus, cleared up and he was discharged. On Jan. 20th last he was admitted into the wards of the Queen's Hospital for Children for pain in the right side of the abdomen of two weeks' duration and wasting. He was thin but not emaciated; the right rectus was at times very rigid, but occasionally a hard tumour could be felt in the region of the right kidney, extending two fingers' breadth below the costal margin; it was sometimes tender. The urine was normal in amount, alkaline, contained a variable amount of pus, and about 0·1 per cent. albumin; no blood. Staphylococci and tubercle bacilli were found in it. X ray report: Increased density in renal region; several shadows scattered over right loin, suggesting calcareous masses in an enlarged kidney or calcareous mesenteric gland. Two very dense shadows at lower part of right ureter suggesting calculi or calcareous matter. The left kidney presented nothing abnormal and there were no bladder symptoms. The heart and lungs were normal. The temperature as a rule was normal, but with occasional rises to 102° or 103° F., apparently due to retention of pus in the pelvis. The boy's condition had improved in hospital, and the local tenderness and rigidity had disappeared, so it was easy to palpate the diseased kidney. The question of the advisability of nephrectomy was raised.

Mr. R. H. ANGLIN WHITELOCKE showed a successful case of Cerebral Decompression for Convulsions, Jacksonian in type, in a boy aged 4 years. The patient was admitted at 9.15 P.M. into the Radcliffe Infirmary, Oxford, on Feb. 2nd of this year, with the history that he had been in perfect health until that morning, when he complained of slight earache. He did not go to school, but in the early afternoon went for a walk. At 5.30 he fell asleep, and at 7.30 awoke feeling sick, complained of headache and soon vomited. Soon after he vomited his face began to twitch and he began to have convulsions which were confined to the right side of his body. He was at the time quite conscious but spoke indistinctly. As the spasms continued his mother put him into a warm bath and sent for medical assistance. As the fits began to increase in duration and severity the family physician sent him to hospital. The spasms began in the face and rapidly spread to the thumb, wrist, forearm, and arm, and then downwards until the lower limb had been completely involved. The child was then hardly conscious. Between the seizures there was but a momentary period of muscular relaxation, and fit followed upon fit with marked regularity. There was no incontinence of urine, and no biting of the tongue. As the condition was steadily becoming worse, and as the fits were entirely localised to the one side, Mr. Whitelocke determined to perform an exploratory operation with the double object either of removing, if possible, some localised focus of cortical irritation, or of diminishing intracranial pressure in the event of there being some more deeply situated cause, such as a neoplasm or collection of fluid. The situation chosen for the opening was the neighbourhood of the Rolandic area. The dura mater bulged owing to the presence of increased intracranial pressure. A flap of dura mater was made and drawn aside. The blood-vessels on the surface of the exposed convolutions were somewhat engorged, but there existed no definite lepto-meningitis or gross lesion, and to all intents and purposes the exposed portion of the brain was healthy. A fine exploring cannula was then passed into the cavity of the left ventricle and withdrew a few drops of clear cerebro-spinal fluid. Suspecting the presence of a deeply placed neoplasm or perhaps a tuberculous focus, the bony disc was *not* replaced, whilst the dura mater was only partially sutured. The skin flap was restored and held in position by interrupted silkworm sutures to allow of leakage, for no other means of drainage was considered advisable. The fits ceased from the moment the dura mater was incised. The wound healed perfectly, and the child made a complete and uneventful recovery. He is now in perfect health and spirits. The interesting features for consideration were: (1) the still unascertained cause of illness, no lesion having been found; (2) the one-sided limitations of the spasms, with at first no loss of consciousness, no incontinence of urine, and no biting of the tongue; (3) the complete cessation of the fits so soon as the intracranial pressure was relieved by operation; and (4) the complete and rapid restoration to health after such a sudden and severe nerve-storm.

Mr. WHITELOCKE also showed examples of Enlargement of the Thyroid Gland (Goitre) in a family of five children, four boys and a girl. The respective ages were 5, 7, 9, 10½, and 12 years. The family history was that the four elder children were born in a southern county, where they lived on high ground, the youngest near Oxford, at a low-lying village close to the Thames. The parents were healthy and intelligent people, the father earning only a small weekly wage. One was said to have been born with an "enlargement in his throat," so that for the first four weeks of his existence his life was despaired of, and the monthly nurse almost daily informed his mother that he could not live. For some months later he was liable on the least excitement to suffer from "fits of suffocation." This went on till he "cut his eye-teeth." Attention was first drawn to the condition of two others by the school inspecting doctor 18 months ago. In another the neck began to enlarge when he was aged 10 years. In the eldest the goitre only became apparent during the last six months, and not before he was approaching the age of 12 years. For the last 18 months Mr. Whitelocke had had the four youngest children continuously under observation and treatment. During this time there had been very little change excepting that the neck in the congenital case had grown a

little larger and one of the others had become less. The eldest boy had only lately come under treatment, for his enlargement had been very gradual and somewhat slow, and was of only recent development. As to etiology, nothing very definite could be established beyond the fact that one was evidently a congenital case, and that the two eldest did not show symptoms until after the age of 10 years. The pathological condition was, he ventured to think, one of simple parenchymatous enlargement. Treatment had consisted in an increased weekly pecuniary allowance, the administration of cod-liver oil, iodine preparations, and occasionally iron. The home surroundings had been improved as regards warming, increased light, and general hygiene. This *régime*, steadily enforced for over a year, seemed to have arrested the glandular increase in most cases. The congenital case still remained the largest. Amongst the interesting points were: (1) the existence of the disease in *all* the children of the family, the parents being wholly exempt; (2) that the history pointed clearly and definitely to the fact that one case at least was congenital; (3) that the thyroids became enlarged in all the children whether they lived on bracing and high ground or in the relaxing atmosphere of a low-lying and somewhat damp watershed; (4) the excellent general health and spirits of the children in spite of the poor pecuniary circumstances of their parents.

Dr. H. MORLEY FLETCHER showed a case of Operative Myxœdema—Cachexia Strumipriva. The patient was a girl aged 13 years. In October, 1907, at the age of 7 years, she was admitted to hospital with a small, elastic, freely movable swelling, the size of a marble, situated in midline of the neck at the level of the thyroid cartilage, and apparently attached to the thyroid gland. The swelling was first noticed two years previously, and had been gradually increasing in size. It was removed without difficulty and was found microscopically to consist of thyroid gland tissue. She was discharged, but was readmitted on Nov. 22nd in a state of cachexia strumipriva. Three weeks after the operation she became drowsy, and swelling of the face and hands with puffiness under the eyes was observed. On admission the temperature was subnormal; the urine contained no albumin. She was treated with thyroid extract, and discharged on Dec. 11th in a considerably improved condition. Treatment was continued intermittently until December, 1908, when she came to the children's department. She had taken no medicine for at least six weeks, and presented the typical appearance of myxœdema. She was very lethargic, the skin was dry and rough, the hair over the temples very thin. The urine was natural. Pulse 66 per minute; temperature 98° F. Since then she had been taking thyroid extract continuously, but in spite of this had not progressed satisfactorily. The mental condition was good. At the age of 11 years she was in Standard V., but was put back to Standard IV. Bodily growth was fairly normal. She had never menstruated. She still presented a puffy, pallid appearance, suggestive of myxœdema or chronic nephritis, though the urine had been always found to be normal. At times she became lethargic, though as a rule she was bright and active-minded. The addition of suprarenal extract to the thyroid extract had made no apparent difference.

Dr. E. A. COCKAYNE showed a case of Distal Myopathy. The patient was a boy aged 6 years. There was no history of any similar condition in the family. The mother stated that the patient had always been undersized, and had suffered from birth with incontinence of urine and fæces. At 3 years of age she noticed that he had considerable wasting of the muscles below the knee, and that his buttocks were small. She did not think the wasting had progressed much since it was first noticed. The boy seemed to fall over rather easily. The patient was very small for his age, 37½ in. in height, but was of normal intelligence. The face, arm, and trunk muscles appeared natural. There was marked symmetrical wasting of the glutei and of the leg muscles below the knees. The thigh muscles were well developed. There was no deformity of the feet, and all movements could be carried out naturally. There was usually some cyanosis of the legs below the knees. No fibrillation had been observed. Sensation to touch, pain, heat, and cold over both arms and legs was natural, and muscular sense was preserved. The knee-jerks were brisk, but neither ankle-jerks nor plantar responses could be obtained. Dr. Cecil Lyster had kindly examined the electrical reactions on two occasions, and reported that there was no alteration either qualitative or quantitative even in the wasted muscles. He stated that a skiagram showed a narrow pelvis, and changes in the epiphyses of the long bones characteristic of rickets. But for the implication of the glutei muscles the distribution of the wasting resembled that seen in an early case of peroneal atrophy of the Charcot-Marie-Tooth type. Soca had described a case of this disease in which the arms were unaffected, and in which the glutei, though normal in appearance, showed well-marked reaction of degeneration. Against this diagnosis was the fact that there was no alteration of sensation and no change in the electrical reactions. Though it did not fall into any definite group of the myopathies he (Dr. Cockayne) had preferred to call it a distal myopathy rather than a myelopathy.

Mr. G. BELLINGHAM SMITH showed a case of Congenital Absence of Abdominal Muscles and other Defects in a baby aged 2 months. The infant was the first child of healthy parents. On examination the abdomen was flattened from before backwards, while there was a distinct bulge in either loin, which was markedly accentuated whenever the infant screamed or strained. Centrally there was a wide flattened median band stretching from the ensiform to the pubis which represented the rectus sheath. If the abdomen was palpated on either side of this central band the coils of intestine could be readily felt, apparently only covered by skin, fascia, and peritoneum. The central sheath itself could be easily picked up between finger and thumb, and suggested to the feel merely a band of fibrous tissue without any intervening muscular tissue. The whole of the abdominal wall failed to react to electrical stimulation. In addition to this apparent lack of muscular tissue in the abdominal wall the infant also presented other congenital defects. The right leg was kept slightly flexed at the hip- and knee-joints, and was said to be moved but very little. There was a moderate degree of genu valgum and talipes calcaneo-valgus present on both sides, the latter condition being more marked on the right side than on the left. Over the præcordial area there was a faint systolic murmur, which was loudest in the region of the impulse. In all other respects the infant appeared to be healthy.

Dr. J. D. ROLLESTON showed a pathological specimen of Diphtheria of the Œsophagus. It was from a boy, aged 6 years, who was admitted to hospital on the fifth day of the disease. Death occurred within one hour of admission. The specimen showed a normal condition of the upper part of the œsophagus. The lower 1¾ inches showed longitudinal areas of congestion. A small piece of membrane was visible at the upper part of his congested area, and there were larger patches of membrane present at the cardiac end. The membrane was also present in the nasopharynx, larynx, and trachea. The stomach was normal. Pure cultures of Klebs-Loeffler bacilli were obtained from the lesions in the throat and œsophagus.

Mr. WHITELOCKE read a short paper on Two Successful Cases of Operation for Strangulated Inguinal Hernia in Female Infants of the ages of 22 and 17 days. 1. In September, 1912, a female infant, 22 days old, was admitted under his care into the Radcliffe Infirmary. The mother stated that the baby was entirely breast fed, and that for the last five days nothing had passed through her bowels. The family attendant, without seeing the child, advised the mother to give it castor oil; this, however, was invariably vomited as soon as swallowed. The infant had vomited for three days, had moaned almost continuously as if in great pain, and had slept hardly at all during the whole of this time. When examined, a firm tense swelling was found in the right inguinal region of the size of a small hen's egg. Both legs were tightly drawn up, and the child was blanched and obviously very ill. A few drops of chloroform were administered, and after the necessary surgical preparations had been made herniotomy was performed. In the hernial sac were found the right ovary and Fallopian tube, together with a small loop of the small intestine. This last was severely strangulated, was purple black, but shiny. The circulation was gradually restored by the application of a warm saline wash, and the colour soon improved. The contents of the sac were returned to the abdomen, the

neck of the sac ligatured, whilst the sac itself was excised and the operation rapidly completed. Recovery was perfect and quick, and the babe became well-grown, fat, had a firm scar, and showed no after effects from the operation. 2. On March 6th of this year Mr. Whitelocke was called into the country to see the female infant of a lady who had been confined only 17 days previously and who was still in childbed. The family physician informed him that the child had been screaming much since birth, that it had vomited all its food for nearly three days, that its bowels had not moved even with the use of glycerine suppositories for four days, and that it refused the breast. In the right groin was a swelling, tense, tender, and tympanitic, the size of a small Tangerine orange. He decided to operate at once, realising that he had to deal with a strangulated inguinal hernia in a very young and feeble subject. After the necessary preparations had been hurriedly made, and with the help of chloroform, he cut down upon and opened the sac. The contents consisted of a swollen and very œdematous cæcum with a long discoloured appendix vermiformis. The appendix was exceptionally large for such a young infant, and owing to the presence of a very short mesentery it had become doubled upon itself so as to produce a condition of almost complete strangulation. This organ was quickly removed, and after considerable difficulty at the internal ring he succeeded in returning the swollen cæcum. The internal abdominal ring admitted two fingers. The sac was ligatured, and the wound closed and dressed with collodion. In a very short time after the little one took the breast, passed urine, and fell asleep. The bowels were moved naturally some hours later, and the wound healed without any trouble. He had recently heard that the patient was thriving and was in all respects well. Several points of interest to the surgeon might be gathered from the experience of these cases, and amongst them might be noted: (1) the early ages at which strangulation occurred, and with apparently no definite cause; (2) the unusual nature of the hernial contents, in the one case an ovary and tube as well as small intestine, in the other an unduly mobile cæcum with large appendix measuring 3½ inches; (3) the successful issue in each case even after the obstruction and symptoms of strangulation had lasted for over three days; (4) the absence of post-operative shock after a general anæsthetic and herniotomy, and in the younger infant after appendicectomy in addition. Herniotomy in such young infants must be exceptional, and a successful appendicectomy at the age of 17 days was certainly so.

Mr. WHITELOCKE also read a paper on a case simulating Meningitis in which the symptoms were caused by the escape of threadworms into the peritoneal cavity through a perforated appendix. The patient, a girl of 5½, was admitted into the Oxford County Hospital in May, 1910. She was sent in with the diagnosis of tuberculous meningitis, seeing that a year previously an enlarged gland had been removed from the side of her neck. When examined it was noticed that she seemed very ill, had a temperature of 102·4° F., and a pulse-rate of 112. There was marked converging strabismus with contraction of both pupils, and some photophobia. Her mother stated that for 36 hours or more she had been sick at irregular intervals, was restless, and now and then screamed out when apparently dozing. She was very constipated, and an enema had produced but a small result. She slept badly and often refused food; any attempt at drinking brought on immediate vomiting. She had urinary incontinence. There was no disease of the ears or air sinuses. For the first two days after admission her condition and symptoms remained about the same, but after this she began to pick at the bedclothes, to throw herself about in bed in a restless irregular manner, and to wet herself more frequently. At this period Mr. Whitelocke noticed for the first time that she kept her right lower limb fully flexed and drawn up to the abdomen, whilst she moved the left from time to time, often extending it. Palpation of the lower abdomen gave the impression of increased rigidity in the right rectus muscle and caused her to call out when even gentle pressure was brought to bear over the cæcum. On percussion there was no distinct dulness anywhere. The existence of these physical signs on the right side, together with the increasing sickness, quickening pulse, and general weakness, determined him to explore the region of the appendix. The mother readily assented to the operation, and with complete ether narcosis he operated, utilising the McBurney or gridiron incision. When the peritoneum was opened a small quantity of semi-purulent fluid escaped, emitting a fæcal odour. An inflamed process of omentum was found covering in the anterior surface of the cæcum and the appendix completely. In peeling the inflamed omentum from the appendix he came upon a colony of about a dozen dead threadworms. After the appendix had been cleared and delivered through the wound it was found to possess a pin-point perforation ¾ inch from its distal extremity on its mesial aspect. Through the minute perforation a living threadworm was to be seen wriggling until it finally extruded itself on to a swab held to receive it. In quick succession three or four others of smaller size, and presumably of less mature age, passed in single file through the opening. The base of the appendix was crushed and ligatured, and the organ excised according to custom. The omentum was then drawn into the wound and carefully examined; as a result three more live worms were removed from its meshes at some distance from the inflamed and previously attached portion. In swabbing the pelvic peritoneum with hot saline in search for others, four more live ones were caught and removed. The wound was then closed. The appendix when cut open was found to be crammed full of oxyurides of all sizes and ages. The very small and immature worms greatly predominated. The mucous membrane was considerably ulcerated, especially in the immediate neighbourhood of the perforation. The opening was so small that a fully grown oxyuris squeezed itself through with decided difficulty. After the operation the nervous symptoms and sickness very soon disappeared, the pulse and temperature fell to normal on the following day, and from this time onwards the recovery was rapid and complete. The case presented many points of interest, and amongst them may be enumerated: 1. The difficulty in making a rational diagnosis in the first instance was increased by the existence of an almost positive tuberculous history on the one hand, and by the entire absence of any other known cause on the other. 2. The nervous symptoms played such an important rôle, and the pain was so generalised during the first and subsequent examinations, that there was little to direct attention to the local focus in the lower abdomen. 3. The only truly localising and diagnostic symptom was the continued flexion of the right lower limb. 4. The imitation of a true organic lesion or lesions by the reflex irritation caused by the active animalcules wriggling about on the exquisitely sensitive peritoneal surface. 5. The immediate cessation of the urgent symptoms as soon as the cause had been removed. 6. To the surgeon especially the behaviour of the omentum in coming to the rescue in this case as it so often does in others, by limiting and preventing the extension of local mischief. In this particular case it appeared not only to have checked the peregrinations of many of the worms, but it seemed to have actually killed them. The colony of dead worms was to all appearances encased by the adherent omentum and held in bondage, as it were, in the immediate neighbourhood of their place of exit from the cavity of the appendix. 7. The absence of infection as the result of the perforation, although there was a free escape of an odoriferous semi-purulent discharge on to the peritoneal and wound surfaces. A drainage-tube was used only during the first 24 hours after the operation. The case was unique in the operator's experience, and he had neither heard of a similar case nor had he seen an account of one in surgical literature.

SECTION OF BALNEOLOGY AND CLIMATOLOGY.

High Blood Pressure.

A MEETING of this section was held on April 17th, Dr. F. A. MOUILLOT (Harrogate) being in the chair.

Dr. W. EDGECOMBE (Harrogate) read a paper on the Significance, Treatment, and Prognosis of High Blood Pressure, of which the following is a summary. The measurement of blood pressure by the mercurial manometer is, on the whole, reliable and forms a useful clinical guide. There is a condition of functional or "neurotic" high blood pressure not due to arteriosclerosis and distinguishable from hyperpiesis; in the majority of cases of functional high pressure direct treatment is unnecessary and may be harmful; functional high blood pressure does not readily lead to arterio-

sclerosis; the significance of high blood pressure is less serious than usually supposed. The treatment of early cases of hyperpiesis is imperative and usually satisfactory—spa treatment gives the best results; the treatment of developed arteriosclerosis is unsatisfactory, and should be by general measures and periodic spa treatment rather than by drugs; excess of treatment may be harmful as liable to accelerate cardiac defeat; the prognosis in cases of high blood pressure is less gloomy than usually considered.

Dr. A. MANTLE (Harrogate) then read a paper on the Undesirability in Confirmed Cases of High Blood Pressure of Actively Applying Therapeutic Means to Reduce it, which appears in full in this issue of THE LANCET.

Dr. C. W. BUCKLEY (Buxton) reported a case of high blood pressure in a woman, aged 38, whose systolic pressure had persisted between 240 and 270 for the three years during which she had been under observation. Her most troublesome symptoms were neurotic, chiefly obsessions. Treatment had proved unavailing, even rest in bed for a prolonged period, but thyroid gland seemed to be of some benefit. Cardiac hypertrophy gradually developed, also albuminuria. He referred also to a case with a similar range of pressure in a woman, aged 55, with no symptoms definitely referable to this, but who had rapidly developed all the appearance of an old woman.

Dr. W. BEZLY THORNE endorsed the views impressed by both Dr. Edgecombe and Dr. Mantle, especially as to the danger of attempting to lower blood pressure by means of vaso-dilators. That proceeding, he said, hastened the failure of cardiac compensation, increasing general weakness and dyspnœa, and encouraging œdema. In the course of 15 sphygmometric observations he had never known digitalis to raise blood pressure. On the other hand, he had found the solution of adrenalin, orally administered, to lower maximal readings, apparently by bringing the muscular tissue of the arteries into action and stimulating conductivity. He strongly advised making diastolic in conjunction with maximal records of pressure

Dr. R ACKERLEY (Llandrindod Wells) said he could not regard high blood pressure as the cause of the symptoms associated with it. As regards food, he did not think red meat, or any other form of nitrogenous food, was necessarily dangerous. Few meals, moderate or small in quantity, avoidance of common salt, and free flushings with water apart from meals, were the essential dietetic rules. Starchy foods, imperfectly insalivated, were dangerous, as they fermented in the bowel.

Dr. C. O. HAWTHORNE expressed the opinion that to present sphygmometric readings in terms of blood pressure was hardly justifiable. He agreed that a mere high reading was not a claim for active treatment. He doubted if any drugs had a sustained effect on high readings, and the action of nitrites was only short-lived.

Dr. F. H. HUMPHRIS quite agreed with the prevailing sentiment of both papers which had been so ably argued, but, on the other hand, he entered a protest against the suggestion that the treatment of a high blood pressure by high frequency was disappointing. If it were so, either the choice of the case or the technique was at fault. Too often the current used (d'Arsonval) was limited in amount to 250–300 ma., whereas it should be 1000 ma. and upwards. With this current the reading should be 10 per cent. lower at the end than at the beginning of the treatment.

SECTION OF ELECTRO-THERAPEUTICS.

Use of the X Rays in the Diagnosis, the Causes, and the Terminations of Gastric Ulcer.

A MEETING of this section was held on April 18th, Dr. REGINALD MORTON, the President, being in the chair.

Dr. ALFRED C. JORDAN, in opening a discussion on the Use of the X Rays in the Diagnosis, the Causes, and the Terminations of Gastric Ulcer, said the main interest centred on the chronic ulcers. Acute ulcers gave rise to a very persistent spasmodic constriction at the site of the ulcer, but the converse was not always true; he had often seen a most persistent constriction at a particular point of the stomach—present on several days—and no organic lesion was found on operation. Chronic gastric ulcers occurred typically at two points—at the pylorus and at the middle of the lesser curvature. At the pylorus an ulcer produced a permanent spasm which was equivalent in its effect to pyloric stenosis and led to dilatation of the stomach, the appearances of which, on X ray examination, were well known. In some cases reversed peristalsis was seen, strong waves passing from the pylorus toward the cardiac end of the stomach. Sometimes a series of reversed waves would alternate with a series of waves in the normal direction—or *vice versâ*. If a complete examination of the gastro-intestinal tract were made in cases of gastric ulcer it would be found that intestinal stasis was at the bottom of every case. The manner in which this led to gastric ulcer would be clear from the instances he had to show. The constant occurrence of duodenal distension in intestinal stasis was now well known. The effect upon the stomach was great; the high pressure in the duodenum caused the stomach to work abnormally hard to get a portion of its contents out through the pylorus, which thereupon closed to prevent regurgitation. The pyloric spasm was greater still when the gastric contents were too acid. The spasm thus produced tended to persist, simulating pyloric stenosis, and making it difficult to demonstrate the duodenal distension by the X rays. The difficulty was best overcome by giving the carbonate of bismuth in a large dose about an hour after a meal, and adding a little sodium bicarbonate if necessary. In a normal case the duodenum was narrow and short, and the bismuth passed through it so quickly that no photograph could be obtained with an ordinary apparatus. In stasis cases the behaviour of the duodenum was quite different; it was too wide and too long; it showed strong peristaltic contractions, but there was repeated regurgitation of the bismuth from the fourth and third to the second part of the duodenum, little or no bismuth succeeding in passing through and entering the jejunum. In such cases the bismuth remained in the duodenum many minutes, and it was easy to obtain a photograph by inserting a sensitive plate beneath the fluorescent screen, and leaving it there while observing the behaviour of the duodenum. All his patients were examined in the same way, and the "static" duodenums could be picked out from amongst the normal with the greatest certainty. His results, both normal and abnormal, had been tested over and over again at operations, and had been found to be accurate. As the stomach dilated it was dragged down by its excessive weight, and the weight of the overloaded transverse colon was added to that of the stomach, an ulcer appearing eventually at the point of greatest strain, the pylorus. The effect of dropping of the viscera had been explained by Mr. Arbuthnot Lane; if the liver dropped, carrying the pylorus down with it, the point of greatest strain was shifted to the lesser curvature, and an ulcer then appeared there. It would be understood that the mechanical factor furnished the predisposing cause; the determining cause was microbic, and perhaps in part chemical. Bacillus coli had been found in pure culture in the depressed base of chronic ulcers of the lesser curvature. These formed a most fascinating study. The depressed base of the ulcer occupied some part of the lesser curvature. The raised crater-like margins of the ulcer were well seen, but the most striking feature was the firm, spasmodic contraction of the circular fibres of the stomach over the area of the ulcer, giving rise to a tight hour-glass constriction, a narrow isthmus joining the cardiac with the pyloric portion of the stomach, permanently except under an anæsthetic. This fact was very important to surgeons, for at operations they saw no hour-glass appearance. The form of the stomach in a typical case was remarkably constant; the pyloric portion presented a nightcap-like projection upwards, the reason of which became clear if one drew a diagram of the stomach with the chronic ulcer, and represented on the drawing the effect of the abrupt shortening of the circular fibres over the ulcer and nowhere else. The pyloric portion was usually large and low, showing that gastric dilatation had existed before the appearance of the ulcer. This was as would be expected from the explanation already given, for the duodenal distension had previously led to pyloric spasm, ulceration, or actual stenosis. As to the fate of these chronic ulcers, some persisted for years often unrecognised (though the X ray examination

would obviate that in the future). A few cicatrised completely, leaving a varying amount of hour-glass constriction. Others became cancerous. This had often been denied, but radiography afforded positive proof. He was able to show early cases of cancer with the typical appearances of a chronic ulcer, and more advanced cases showing more modification from the typical form. Lastly, there were the most advanced cases of cancer in which the origin from a chronic ulcer could no longer be demonstrated. Thus they had another instance of the importance of intestinal stasis in the causation of cancer. The series of lantern slides illustrated the typical form of the stomach in gastric ulcer, the transition to cancer, and in all cases the accompanying evidence of marked intestinal stasis—viz., the distended duodenum, the ileal stasis (with an ileal kink in some cases), and the prolonged stasis in the large intestine. Every slide shown had been fully confirmed by operation or by post-mortem examinations. Dr. Jordan then referred to the importance of recognising the signs of intestinal stasis in the earliest stages before permanent injury had befallen organs such as the stomach. He was frequently able to recognise an ileal kink in its very beginning, when it consisted of nothing but a slight local thickening of the mesentery of the last inch or two of the ileum. Even the early stages produced an inevitable reaction on the duodenum, which became distended, and secondarily on the stomach in the manner already explained. Lastly, he would again insist on the importance of a complete examination of the gastro-intestinal tract in all cases of gastric ulcer. The gastric disorder was merely an end result; the radiologist must bring all the resources of his art to the elucidation of its primary cause, and to a large extent he would be successful.

Dr. A. E. BARCLAY (Manchester) followed with a paper which was strongly supported by a number of radiograms. His contention was that post-mortem and operative findings were not necessarily a true guide to the condition during life. The X ray method was the only feasible means of studying the stomach as it fulfilled its functions. The stomach was a sensitive organ, in which purely spasmodic contractions of various types were frequently seen. These spasmodic contractions were of great functional importance, and might so narrow the lumen that actual obstruction resulted. Powerful peristalsis might force an unmasticated bolus through, and cause an abrasion which later on became an ulcer. Ulcers of the stomach were almost invariably associated with spasmodic contractions, and these ulcers probably caused such contractions, though it was likely that, in the first place, the ulcer was indirectly due to the spasm. The chronic gastric ulcer was the result of the vicious circle so formed. Spasmodic contractions might be due to a variety of causes, the removal of which might cure the patient, but this would not necessarily result if an ulcer had formed, as a vicious circle had become established. The irritation of the ulcer perpetuated the spasmodic contraction, which made the site of the ulcer a narrow channel through which the food had to be forced. Gastric ulcer was a sequel to functional or organic lesions of other parts of the alimentary tract, and its formation depended chiefly on physical causes.

Mr. A. E. JOHNSON said he considered that the most hopeful line in treatment and diagnosis was for radiography to be applied to early cases of dyspepsia, and for medical treatment to be persisted in for some time, and in the eradication of all sources of sepsis before undertaking any operative measures.

Mr. C. THURSTAN HOLLAND said it would be interesting to know, with regard to etiology, whether the constipation preceded the stomach symptoms, or *vice versâ*. He was sure that in some cases of gastric ulcer there was no constipation. Moreover, if constipation was so often a cause of the symptoms of gastric ulcer and hour-glass contractions of the stomach, why did simple gastro-enterostomy of the upper segment frequently cure the patient? Dr. Jordan appeared to believe that cancer often occurred on the top of old chronic gastric ulcers; but in the whole series of cases of gastric ulcer at Liverpool malignant disease did not occur in any one of them.

MIDLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Exhibition of Specimens.—Dysmenorrhœa and Sterility.

A MEETING of this society was held at Birmingham on April 8th, Dr. E. MALINS, the President, being in the chair.

Dr. C. E. PURSLOW showed a large Cystic Tumour of the Kidney which he had removed by abdominal section. The patient, who was 35 years of age and single, presented a cystic swelling of the size of a seven months' gravid uterus; it was lobulated and freely movable and extended across the middle line, though lying more on the right side of the abdomen. It could be felt from the vagina and not from the loin, and, in fact, showed all the characters of an ovarian cyst, and was diagnosed as such. As soon as the abdomen was opened the tumour was seen to be renal in origin; the outer layer of the ascending mesocolon was incised and the tumour removed after tying off its attachments. The peritoneum of the mesocolon was closed with sutures and the abdominal wall closed without drainage. The patient made an uninterrupted recovery. The cyst was found to be formed in about equal proportions by the dilated pelvis and the distended cortex, little or no kidney tissue being left unaffected. Even after operation the most careful questioning failed to elicit anything in the previous history which would have given a clue to the condition.—Dr. WALTER C. SWAYNE observed that he had had precisely a similar experience to that recorded by Dr. Purslow. In his case it was quite impossible to say before operation from which side of the abdomen the tumour had arisen. Even when the abdomen was opened the organ was only diagnosed as being kidney by reason of the loose peritoneum over it.—Dr. T. CLARE recorded an instance of an enormously dilated kidney becoming manifest immediately after labour. In this case the condition had in no way interfered with pregnancy or labour.—Dr. THOMAS WILSON remarked that he also had been misled in diagnosis by a renal tumour. Two or three years ago he had diagnosed a case as axial rotation of an ovarian cyst complicating pregnancy, but operation proved that it was a suppurating hydronephrosis which had become infected from the ascending colon. Again, more recently he had seen a case which had been diagnosed as an ovarian cyst, but which he thought was an omental cyst. Laparotomy disclosed a cyst in relation with the left kidney. He had removed the kidney, but since had regretted this as he thought that in this case it would have been possible to leave a portion of the organ.—Dr. F. EDGE was interested in Dr. Wilson's remarks and wondered how far it was possible to leave a portion of the kidney with a good prospect of retaining its functional activity.—Mr. K. M. PARDHY thought that in these difficult cases the diagnosis frequently depended upon whether a general surgeon or gynæcologist saw the patient. He had seen more than one instance where a tumour was diagnosed by a general surgeon as a movable or cystic kidney, which proved at operation to be a cyst of ovarian origin.—Dr. PURSLOW, in reply, said that although correct diagnosis was, of course, highly desirable, in this particular case it did not affect treatment. Removal of the tumour was the only course open to him. Two diagnostic points occurred to him which had been cited as useful by a general surgeon—viz., if pain was produced upon pushing the tumour down into the pelvis it was likely to be of renal origin; if the tumour projected markedly forwards it was probable that it was connected with the ovary.

Dr. THOMAS WILSON showed the Fœtus and Sac from a case of Full-term Intraligamentary Gestation. A point of considerable interest was the fact that the patient had never shown any signs of pregnancy and was unaware of the nature of her condition. Menstruation had been quite regular throughout. The fœtus had undergone "aseptic skeletonisation."—Dr. EDGE remarked upon the extreme difficulty that might arise in the diagnosis of a fœtus enclosed in a sac, even after the abdomen had been opened.—Dr. C. E. PURSLOW observed that when the liquor amnii had drained away at times it was extremely difficult to diagnose a pregnant uterus from a fibromyoma.—Dr. S. LEWIS GRAHAM asked for information as to the size of the uterus, since in a case of full-term ectopic gestation that he had seen under the care of Dr. Copeland Savage the

uterine sound could be passed for 9½ inches. In this case fœtal movements were quite evident.—Dr. WILSON, in reply, said that he did not think it would be possible for anybody to diagnose correctly the condition before operation in this case. There was no menstrual history, no evidence of false labour, and no fœtal movements. The uterus was quite small and certainly not more than 3 inches in length. He had seen two cases of full-term extra-uterine gestation besides the present one. One of these had been under the care of the late Mr. Lawson Tait. The other he saw last year at Manchester under the charge of Dr. W. E. Fothergill. The diagnosis had been correctly made in this case by the practitioner who sent the patient to hospital.

Dr. WILLIAM SMITH showed a Uterus the seat of Multiple Fibromyomata, interstitial and subperitoneal, complicating a two and a half months' gestation. He had removed the uterus from a woman, aged 30, whose menstrual periods had always been regular but excessive until January, 1913. The last period terminated on Jan. 28th, and five weeks later she sought advice on account of an abdominal tumour. The swelling rapidly increased in size, and three weeks later it was decided to explore, and if necessary remove, the uterus. This was done on April 3rd, 1913, and the patient made a good recovery. The largest fibroid was situated low down upon the anterior wall and would have obstructed delivery per vias naturales. The patient had had no pressure symptoms and was in good health. The reason why hysterectomy had been performed instead of awaiting events was the extraordinarily rapid development of the mass whilst under observation.—Dr. WILSON said that the treatment of such a case as this could well form the subject of discussion before the society. The general rule now adopted in this complication was as far as possible to allow the pregnancy to go to term and to interfere only if accident occurred. He had himself removed a pregnant uterus with fibroids upon two occasions. In one case the tumour had appeared clinically to be a sarcoma, and this was the indication for operation. In the other case retention of urine and severe pain had called for treatment. In such a case as Dr. Smith had shown he thought that it would have been preferable to allow the pregnancy to continue to term and then deliver by Cæsarean hysterectomy if necessary.—Dr. SWAYNE agreed with Dr. Wilson's views, and said that the opinion now largely held was not to interfere in these cases unless dangerous symptoms arose. The class of operation must be decided by the conditions present. Myomectomy had a very definite place in this connexion, and he had successfully enucleated fibroids during the early months of pregnancy without disturbing the gestation.

Dr. SMITH also showed the Right Uterine Appendages from a case of Tubal Abortion with extensive Pelvic Hæmatocele. The specimen had been removed from a patient, aged 34, married three years, and with no history of previous illness. The last menstrual period began Oct. 20th, 1912. Upon Jan. 4th, 1913, severe uterine hæmorrhage occurred and she felt very ill. She remained in bed for a week, and on Jan. 13th her temperature reached 102° F. Vaginal examination revealed a large swelling in the region of the right appendages and Douglas's pouch. The pyrexia sudsided but anæmia became progressively worse. Until the anæmia increased a diagnosis of pyosalpinx secondary to early uterine abortion had been made. As the swelling increased in size, however, coincidently with a general improvement in the symptoms except the anæmia, ectopic gestation was diagnosed and laparotomy performed. The ostium of the right tube was found communicating with a large hæmatocele and recent blood was issuing from its lumen. The patient made a good recovery.

Dr. CLARE read a short communication upon the Pathology and Treatment of a case of Dysmenorrhœa and Sterility.—Dr. SWAYNE thought that some cases of dysmenorrhœa and sterility might be due to malposition of the cervix and to acute anteflexion. He had had a small experience in altering the position of the cervix as suggested by Dudley, of Chicago, and had found that the operation relieved the sterility but not the dysmenorrhœa.—Dr. PURSLOW remarked that he had always considered that stenosis of the os internum was one of the causes of dysmenorrhœa, and not contraction of the os externum. In the cases quoted it was the latter that was affected.

Mr. PARDHY showed the following specimens: (1) Fibroid closely Simulating Pregnancy. (2) Fibromyomata of the Uterus from a patient who first recognised the tumour at the age of 20. Increase in size had been gradual until the age of 42. The neoplasm then caused inconvenience from its size, but the menstrual history had always been normal. (3) Uterine Fibromyoma associated with two very large Ovarian Cysto-adenomata.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Spleno-Medullary Leukæmia.—Iodoform and Benzoyl Chloride in Pulmonary Tuberculosis.

A MEETING of this section was held on April 4th, Dr. J. F. O'CARROLL, the President, being in the chair.

Dr. T. G. MOORHEAD reported a case of Spleno-Medullary Leukæmia occurring in a boy aged 11, who was treated by X rays. At the beginning of the treatment the white cells numbered 325,000 per c.mm., and the red cells 1,735,000 per c.mm., and the boy's weight was 5½ st. After five weeks' treatment, with exposure of five minutes every third day, the white cells had sunk to 19,600, the red cells had increased to 3,217,000, and the weight was 6 st. 4 lb. At the same time the spleen had diminished considerably in size, and the general health was much improved. The X ray treatment was then unavoidably discontinued, and a month later a severe relapse was observed, the white cells having gone up to 192,000 per c.mm. Shortly afterwards symptoms of miliary tuberculosis supervened, and death occurred. In spite of the apparent immediate beneficial effect of the X ray course the rapid termination of the case suggested that possibly the effects of X rays were not really remedial, and that as a result of their use the resistance to tubercular infection in leukæmic cases was diminished. That suggestion was supported by the records of other cases. —Professor E. J. MCWEENEY said his experience closely coincided with Dr. Moorhead's—i.e., the influence of the X rays in causing a diminution of the spleen and an amelioration of the symptoms. A point that struck him was the absence of granular cells which was met with in a great many cases. Ehrlich indicated that a large number of eosinophile cells was thought to be the most marked feature in leukæmia, but the demonstration of such a feature in practice was difficult. With regard to the termination of the case by acute miliary tuberculosis he had a similar experience in one of his cases.—Mr. M. HAYES, from his experience in the treatment of several cases, extending over the past six or seven years, by X rays, said that he had found that there generally came a time when X ray exposure had absolutely no effect no matter how long or regularly it was continued.

Dr. J. B. COLEMAN read a paper criticising the Treatment of Pulmonary Tuberculosis by Iodoform and Benzoyl Chloride. In 1911 the iodoform-benzoyl-chloride treatment by intramuscular injections was carried out in Steevens' Hospital, Dublin, on patients suffering from pulmonary tuberculosis. Four out of seven patients so treated died in the hospital, and the treatment was subsequently discontinued. This was the method of treatment which the medical staff of the Royal National Hospital for Consumption for Ireland refused to sanction when it was suggested for trial in the hospital. Amongst the objections to the treatment of pulmonary tuberculosis by iodoform was the fact that the drug was a weak germicide, not fatal to bacteria; if dusted over sterilised nutrient media growth took place from organisms contained in the iodoform itself, and it was not monotropic for the tubercle bacillus, in the sense in which the term was used in connexion with the specific chemo-therapy of Ehrlich. On the other hand, iodoform was toxic, causing such symptoms as malaise, wasting, anorexia, vomiting, fever, tachycardia, insomnia, delirium, headache, prostration, albuminuria, loss of power in the legs, loss of control over the sphincters, and even death by coma (Treves). Iodoform was also harmful to the eye. In many instances retrobulbar neuritis followed its introduction into the system (Critchett, Terson, Priestley Smith, &c.), and after prolonged use atrophy of the optic nerve had followed. According to Terson it caused retinal hæmorrhage. In pulmonary tuberculosis the *intravenous* injection of iodoform was attended

with special dangers, as it was liable to be followed by severe attacks of coughing, thereby entailing risk of hæmoptysis or of pneumothorax—a risk which could not be justified in the absence of any proved counter advantages due to the administration of the drug. *Mutatis mutandis*, the rules laid down in October, 1912, by Sir Almroth Wright for investigating the effect of ethylhydrocuprein-hydrochlorate in pneumonia applied to an inquiry on similar lines in reference to the use of iodoform in pulmonary tuberculosis.—Dr. WALTER G. SMITH said that when called upon to judge of the success or otherwise of any method of treating disease there were two postulates—(1) an adequate knowledge of the drugs or methods used; and (2) sufficient clinical and scientific evidence of their fitness. There might be a third, but doubtful, method—viz., the method of analogy. Enough was known about iodoform to justify doubt whether a half-grain dose introduced into the body of a man exercised any influence. Ample experiments had been made as to its germicidal and bacteriological qualities, and they were ascertained to be extremely feeble. A 50 per cent. solution of the drug would hardly kill even the staphylococcus. It had been proved to be harmless to tubercle, and the only bacillus to which it had been found to be deadly was that of cholera. He could not understand how benzoyl chloride—an extremely irritating compound—could be tolerated.—Dr. W. M. CROFTON said there were *a priori* grounds for the use of iodoform as a germicide in pulmonary tuberculosis. Owing to the extraordinary *a priori* objections to the use of intravenous injections of iodoform in ether he had tried to get something as good to be given intramuscularly, and had, therefore, tried iodoform and benzoyl chloride, and if he had not succeeded in some advanced cases he considered that he had not hurried their end; and since some cases had much improved, he held that he was therefore justified in trying the treatment. As to the assumption that iodoform would do no good, he referred to experiments on rabbits which had been injected with the bovine bacillus, and when the disease had developed had been completely cured with iodoform in ether given intravenously. This, he considered, gave good grounds for its use in human cases. He asked if it could be shown that fresh air or sanatorium treatment had ever cured such infected rabbits. In a previous paper he had stated that in early cases tuberculin treatment would cure in a good many instances, but that more advanced cases were frequently unsuitable for tuberculin, and it was, therefore, essential to use some other method, and iodoform was the best intravital germicide he knew. He also found out the other microbes which nearly always accompanied the tubercle bacillus, and used autogenous vaccines made from these microbes. He considered that no more accurately scientific methods could be adopted. Iodoform with the molecule intact he admitted was a weak germicide, but in the presence of pus it was split up with the liberation of free iodine. As to coughing and pneumothorax, he said that the slower the injection was given the less would be the coughing, and he had never met with pneumothorax nor heard of such an accident. Unless Dr. Coleman could suggest something that was better than the present sanatorium treatment he would continue to use the iodoform and the other methods.—Dr. A. R. PARSONS said that it did not take very long after the introduction of a successful treatment for that treatment to become general, and pointed to salvarsan as a notable recent instance. Dewar had in 1903 published a series of cases treated with ethereal injections of iodoform, but notwithstanding this, inquiries made throughout 16 of the principal sanatoriums in Great Britain elicited the fact that 13 of these institutions had never used the treatment.—Dr. MOORHEAD said that he did not think that any member should be allowed to remain under the impression that the Academy disapproved of the trial of any method of treatment unless that method was dangerous, and he did not consider this method dangerous, and he saw no objection to its trial. What should be deprecated was bringing a method of treatment before the public before the profession was satisfied that it should be brought forward. Since all desired to arrive at the truth of the matter, he suggested that a certain number of cases should be submitted to independent examination and then treated and compared with other cases which had not been treated, and that the results might then be reported to the Academy. This, he thought, would demonstrate their desire to arrive at a proper conclusion.—Dr. T. C. P. KIRKPATRICK said that several of the cases in which the treatment was employed were under his care. In no case did the treatment seem to do them any harm, nor did the patients object to it.—The PRESIDENT considered that Dr. Moorhead's suggestion would get over all the difficulties. He suggested that the profession should, as far as possible, avoid doing away with a healthy scepticism, since a dogmatic statement would never get them one step further.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on April 11th, Professor E. W. Hope, the President, being in the chair.—A discussion upon the Administration of Sanatorium Benefit was opened by Dr. Philip Boobbyer, who dealt with the subject as it affected large towns. He said that the heart of any scheme was the dispensary, which was at once a head office, a clearing house, a diagnosis and treatment centre, and an information and instruction bureau for the entire movement. As the clinical section of the curative and preventive work must go hand-in-hand with public health and housing reform it was highly desirable that the dispensary administration should be closely linked with the health and housing departments. This union should be centred in the person and office of the medical officer of health. In Nottingham the tuberculosis officer had been appointed deputy medical officer of health. The incorporation of mothers' and babies' "Welcomes" in any schemes was important. They should be used as branch dispensaries, more especially for the examination, sorting, and treatment of children suffering, or suspected of suffering, from tuberculosis.—Dr. T. Eustace Hill, in considering the question from the point of view of the county councils, assumed that they were the proper bodies to carry out sanatorium schemes and not the Insurance Committees or the local authorities. All forms of tuberculosis should be dealt with, and Insurance Committees should arrange to make the schemes responsible for dependents, because up to 1915 it would be impossible for an Insurance Committee to expend all its funds on insured persons. While it was very desirable that there should be coöperation between the county tuberculosis committee and the Insurance Committee, the county committee should be entirely independent of the county health committee and not a subcommittee of it. He approved of the tuberculosis officer being under the administrative control of the medical officer of health, but considered that the latter officer should not be the chief tuberculosis officer. It was essential that there should be coöperation between district authorities and the county councils. The former might be responsible for supplying literature, sputum flasks, handkerchiefs, &c., and for disinfection, and the county councils might loan shelters to the district councils. He approved of tuberculosis pavilions being erected on the site of existing isolation hospitals and suggested that these should be provided by the authority owning the hospital, the county council paying the cost as rent spread over 30 years, the buildings ultimately belonging to the local authority, who should undertake maintenance, nursing, &c., of patients at a charge of about £65 per annum, excluding the cost of conveyance, for which a motor ambulance would be necessary.—Dr. J. R. Kaye agreed that existing buildings such as isolation hospitals should be utilised. In the West Riding 145 acres of land had been purchased on which acute and advanced cases would be dealt with and where there would be workmen's houses for discharged cases. Referring to the qualifications of the dispensary nurse he considered that she must be exceptionally tactful and discreet and of a higher standard than a health visitor or school nurse.——At an adjourned meeting of the society, held on April 25th, when Dr. W. G. Willoughby presided, the discussion was resumed and Dr. S. C. Lawrence urged the importance of coöperation between the officers of varying authorities. He deprecated the supercilious attitude taken up by some county councils towards district councils, although many of the latter had been dealing with tuberculosis administratively for some time, whereas the county councils were altogether without experience in the matter.—Mr. F. E. Fremantle favoured the employment of the school nurse and health visitor as the tuberculosis nurse, for it was impossible to separate the curative function from the preventive. Although the local authority dealt with prevention, he did not think it would be practicable for the nurse to be paid partly by the

county council and partly by the district council.—Dr. W. F. Corfield, from his experience in Colchester, considered that preventive work must be done by the health visitor and treatment nursing by a special nurse, for the reason that many cases would require constant supervision by the latter.—Dr. Willoughby referred to the sentimental objection which there was in some districts to the school nurse dealing with tuberculous cases.—Dr. J. E. Sandilands considered that the dispensary nurses should be on the staff of the medical officer of health.—Dr. P. Caldwell Smith thought that each sanitary authority should have its own municipal dispensary attached to the public health department. He urged that the London County Council should deal with the question of sanatorium benefit for the uninsured.—Dr. A. H. Bygott feared that tuberculosis work might get into the hands of voluntary charitable institutions the standard of which was not particularly high.—Dr. C. Gerard Taylor and Dr. Frank Robinson pointed out the importance of considering the question of sanatorium benefit administration from the point of view of the general practitioner, who just now was suspicious of innovations.—Dr. J. Howard-Jones referred to the difficulties that had arisen in Wales and Monmouthshire owing to the Insurance Funds having been handed over to the Welsh National Memorial for administration, so that another public health authority without any experience had been created.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 9th, Dr. Walter C. Swayne, the President, being in the chair.—Mr. E. H. E. Stack in a demonstration on some varieties of Arm Splints advocated the use of a malleable metal anterior angular splint for the treatment of fractures of the forearm. For all injuries about the elbow-joint he had found the position of acute flexion to give the best results, and demonstrated a simple method for putting up an arm in that position. He advocated the early use of active rather than passive movements, the patient being better able to judge the amount of movement possible without risk of damage.—Mr. Charles Corfield, in a paper entitled "What is an Accident?" said that it was impossible to give a satisfactory definition, but that each case must be decided on its merits. He pointed out that such divers conditions as lightning stroke and anthrax had been adjudged to be accidents within the Workmen's Compensation Act; while, on the other hand, a case of sewer-gas poisoning was not so decided.—Dr. G. Parker suggested that as a medical man was only expected to use ordinary skill and care, so an accident should only be so adjudged if it would similarly have affected a person in an ordinary state of health.—Mr. W. Stuart V. Stock related two cases in which death occurred two or three days after an operation from Heart Failure in patients the subject of fatty heart, although they had shown no bad signs during a prolonged administration of an anæsthetic.—Mr. A. Rendle Short, in a paper on the Nature of Surgical Shock, pointed out that the two great objections to the generally accepted theory of Crile and Mummery, that it was due to vasomotor centre fatigue, were that the peripheral vessels were found to be constricted and not dilated; and also that the centre could be shown experimentally not to be exhausted. He had examined the venous blood of a number of patients the subject of shock, but had been unable to confirm the theory of Yandel Henderson that shock was due to a deficiency of CO_2 in the blood. His own view was that the symptoms were due to a loss of fluid from the blood which apparently passed out into the tissues and was possibly squeezed out by vasomotor reflexes.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting of this society was held on April 18th, Dr. J. Dobson, the President, being in the chair.—Dr. G. W. Watson showed a case of Heart-block occurring in a man aged 60. For some weeks the condition had been looked upon as being one of complete heart-block. The pulse varied from 22 to 26 per minute, and was regular in rate and force. There were practically no symptoms beyond dyspnœa on exertion and dizziness. He was treated by iodide of potassium in 7 grain doses with small doses of liquor morphinæ, three times a day. After a few days the pulse-rate jumped to 44 per minute, and afterwards to 72–76 per minute. Whenever the pulse-rate altered in frequency, the patient experienced a momentary sensation of faintness.—Dr. Wardrop Griffith exhibited a series of polygraph records of this case and also tracings of three other cases of heart-block under his care, one of which he showed to the society. Dr. Griffith also showed amongst other cases a woman in whom he had diagnosed Patency of the Ductus Arteriosus, and in whom the condition was complicated by acquired mitral disease.—Dr. A. L. Whitehead showed a case of Congenital "Pit" at the right macular region, and explained its developmental origin.—Dr. R. A. Veale showed a man with an Arthritis of the Elbow-joint of doubtful causation, which had given rise to paralysis of the ulnar nerve. Rapid improvement was taking place under massage and electricity. Dr. Veale also showed a case of Hydroa Æstivalis occurring in a boy aged 4 years. He pointed out the seasonal incidence of the disorder, and mentioned its rare occurrence. He also described the mode of onset, and discussed the question of treatment and prognosis.—Dr. C. W. Vining showed two cases of Parasyphilitic Disease of the Nervous System. In his remarks Dr. Vining emphasised the importance of accurately differentiating between tertiary syphilis and parasyphilis. In the former case treatment was necessary and usually effective; in parasyphilis no treatment, as a rule, was of any avail.—Cases were also shown by Dr. T. Churton, Dr. W. H. Maxwell Telling, Mr. R. Lawford Knaggs, Mr. H. Collinson, Dr. J. B. Hellier, Mr. J. A. Coupland, Mr. G. Constable Hayes, and Mr. Alexander Sharp.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on April 17th, Mr. F. T. Paul being in the chair.—Specimens were shown, and these were discussed by Mr. Paul, Mr. G. C. E. Simpson, and Mr. Damer Harrisson.—Mr. F. A. G. Jeans read a note on Desmoid Tumours, with a report of a case and the specimen and microscopic section. The term, he said, was applied to tumours consisting of fibrous tissue growing from muscle and fascia, especially in the lower part of the abdominal wall. It was supposed that they might originate from inflammation, hæmorrhage, or from friction. They sometimes appeared in cicatrices. Mr. Lockwood had described them and had recommended that they should be treated as suspect of malignancy. The specimen shown was of about the size of a pigeon's egg, and had occurred in a fat, healthy woman, aged 22, in the region of McBurney's point, and had been noticed for three years, and was slowly growing and becoming painful.—Mr. Paul said the tumour was of a class of spindle-celled tissue which might become malignant, but when removed in time would not recur.—Dr. J. Murray Bligh read a note on the Tuberculin Reaction. He had used Koch's old tuberculin in 60 cases, all children, half of whom had no symptom of tuberculosis, and half with evident tubercular disease. Dr. Bligh's general conclusions were that the tuberculin reaction was of no practical value for diagnostic purposes. He mentioned that in 9 cases of chorea tested, 8 gave a positive reaction to human or bovine tuberculin or to both, and after the chorea was cured they gave negative reactions.—Professor J. M. Beattie said that a positive reaction in cases where there was no evident disease might arise from tubercular disease being present in the tonsils. He had found this in cases where there was no other tuberculosis. The cases of chorea might give a reaction, as sore-throat was a common accompaniment of chorea, and it might be tubercular, and so explain the high percentage of reaction in chorea cases.—Dr. N. Percy Marsh had found after extensive use of von Pirquet's method that it was of little value, but in children under one year a positive reaction had invariably meant a fatal result.—Dr. C. O. Stallybrass, Dr. C. Rundle, and Professor T. R. Glynn also spoke, and Dr. Bligh replied.

HUNTERIAN SOCIETY.—The annual meeting of this society was held on April 23rd, Mr. A. H. Tubby, the President, being in the chair. The officers for the next session were elected.—Dr. A. Graham-Stewart (Margate) read a paper founded on his winning essay—On the Diagnosis and Treatment of Early Hyperpiesis and Arterio-sclerosis. He pointed out the necessity of getting these cases early—before they had gone on to very high pressures and before there was much structural change in the vessels or heart. By so doing the progress of the disease might often be held *in statu quo*. He then urged the necessity of measuring the blood pressure in all cases of illness. Apart from the etiological factors as mentioned in text-books on medicine, Dr.

Graham-Stewart brought forth others as being frequently more important—alimentary toxæmia, errors in diet, over-eating, the strain of modern life generally, burning the candle at both ends, and chronic septic states. Intestinal toxæmia was shown to be a prominent cause, and the use of vaccine therapy for the relief of hypertonus was discussed. The experiments of Manouélian were brought forward as strong proof of the auto-inoculation theory, as propounded by the author of the paper. The earliest symptoms of hyperpiesis and arteriosclerosis were then touched upon—symptoms which call attention to the vascular system—and a method of differentiating between an accentuated aortic second sound and an accentuated pulmonic second sound was described. Dr. Graham-Stewart also showed a Bowles's stethoscope, and pointed out its advantages over the ordinary instrument in general use. Stress was laid upon the danger of employing nitrites indiscriminatingly and in every case, and a list of symptoms was given warranting their employment. The speaker also pointed out that there were two types presenting hyperpiesis—the physiological and the pathological, and that the former group required a raised pressure to get on at all. He then touched on the treatment of "acute" cases—cases with pressures up to 300 mm. of mercury—and stated that the use of digitalis was not contraindicated provided other symptoms called for its employment, as digitalis had no power of raising an already high blood pressure; that digitalis had this power, and was therefore contraindicated in high pressure, was a deeply rooted belief that ought, in his opinion, to be relegated to the limbo of medical myths.—A discussion on the subject was then entered into by the President, Dr. Purves Stewart, Dr. A. C. Jordan, Dr. F. Howard Humphris, Dr. A. S. Currie, and Dr. A. Westerman, after which the society's silver medal and certificate were presented to Dr. Graham-Stewart by the President.

Reviews and Notices of Books.

The Surgery of the Skull and Brain. By L. BATHE RAWLING, F.R.C.S. Eng., Surgeon with Charge of Outpatients, Senior Demonstrator of Practical Surgery, Demonstrator of Operative Surgery, St. Bartholomew's Hospital; late Hunterian Professor, &c. London: Henry Frowde and Hodder and Stoughton. 1912. Pp. 340. Price 25*s.* net.

THE surgery of the brain is one of the more recent advances of our art, for, except for the treatment of fracture of the skull, it cannot be said to date back more than a few years. Much of what we know is so very new that it has hardly found its way into the text-books as yet, and there is room for a work such as this in which the very latest contributions to this branch of surgery are presented to the profession.

The book commences with an account of the topography of the skull and brain. This is brief, but sufficient for general purposes. There are many points in the special technique of the surgery of the brain, and success in cerebral surgery depends not a little on attention to these points; the chapter on the technique is, therefore, important and contains many hints of value. The author has devised a modification of Cushing's tourniquet which has served him very well; it consists of a metal band which encircles the head and prevents hæmorrhage from the vessels of the scalp which may be troublesome. It appears likely to be useful. The succeeding chapters deal with the various lesions of the skull and brain. In speaking of the treatment of hydrocephalus, the author expresses the following opinions: "While recognising that internal hydrocephalus usually demands surgical interference, it is only in some few cases that material benefit results"; and "The operation which promises the best results, combined with the least risk to the patient's life, is that described as ventriculo-subdural drainage." With these opinions we are disposed to agree.

The escape of cerebro-spinal fluid from the ear, nose, or mouth is usually described in text-books on surgery as a common symptom of fracture of the base of the skull, but the author states—and in this he is in accord with others who have specially discussed this matter—that the escape of cerebro-spinal fluid is comparatively rare, for it does not appear to occur in more than about 5 or 6 per cent. of all cases of fractured base. Perhaps the most important section in the book is that dealing with tumours of the brain. Here we find a very clear description of the tumours which occur within the skull, of the symptoms to which they may give rise, and of the treatment which may be adopted. Mr. Rawling finds that his statistics give a lower mortality than was possible a few years ago. He is inclined to think that the average mortality may be put at less than 20 per cent. In this connexion he makes a statement that all young operators on tumours of the brain should lay to heart. He says: "The great secret in operating on a brain tumour lies in knowing when to terminate the attempt at removal of the tumour and when to rest content with a pure 'decompression.'" So long as surgeons will persist in burrowing into the brain-substance for a supposed subcortical tumour, so long will the mortality remain high.

The book is well supplied with illustrations, and it gives a very readable account of an important branch of surgery. The high quality of the printing is guaranteed by saying that the work is one of the Oxford Medical Publications.

Diseases of Women: A Clinical Guide to their Diagnosis and Treatment. By GEORGE ERNEST HERMAN, M.B., F.R.C.P. Lond., F.R.C.S. Eng., Consulting Obstetric Physician, London Hospital; assisted by R. DRUMMOND MAXWELL, M.D. Lond., F.R.C.S. Eng., Assistant Obstetric Physician to the London Hospital and Physician to Queen Charlotte's Lying-in Hospital. With 8 colour plates and 292 figures in the text. London, New York, Toronto, and Melbourne: Cassell and Co., Limited. 1913. Pp. 899. Price 25*s.*

IN preparing a new edition of his work on diseases of women Dr. Herman has enlisted the services of Dr. Maxwell to help him, more particularly in the parts relating to operative technique. There is little need for us to praise a book which is now in its fourth edition and which has proved a signal success from its first appearance. Dr. Herman's book is, in our opinion, one of the best of the text-books on diseases of women, and the present edition presents a happy blending of the old and the new teaching of this subject which augurs well for its continued success. The number of pages is not very different, but the format has been altered so as to obtain a larger and a better page, a number of new illustrations have been introduced into the text, and there are eight new colour plates. Some of these are extremely good, especially the two illustrating carcinoma of the portio vaginalis and interstitial hæmorrhage into the ovary, but that purporting to represent an erosion is disappointing.

The whole book has been very thoroughly revised. In the chapter on chronic abdominal pain we notice a new section on bacillus coli infections of the urinary tract. In the treatment of prolapse of the uterus Tod Gilliam's operation and that for making a sling of the round ligaments are described. No doubt in the next edition Mayo's valuable modification of the former operation will find a place. We notice that the terms ventro-fixation and ventral fixation are both used, but that there is no allusion to ventral fixation in the index. It would be as well to adopt one term and one only, and ventro-fixation seems the better of the two. In

the treatment of cases of adherent retroflexion there is a description with a good illustration of the operation of salpingostomy. The description of the operation for a ruptured tube has been revised and improved, as has also the description of vaginal hysterectomy. We must confess we are disappointed with the account of Wertheim's operation. The authors seem to us to lay unnecessary stress upon the closure of the vagina below the growth so as to avoid the danger of sepsis and infection by the cancer cells, to the neglect of the necessity for removing as large an amount as possible of the parametrium. From reading this description the novice would certainly not find the ureters easily, and inasmuch as there is no mention of Wertheim's special forceps for the parametrium, nor any account of the best method of clamping and dealing with the parametrium, the operator, depending on the manual, might get into difficulties. The uterine artery is recommended to be tied as far out as possible, but no mention is made of the necessity for preserving the superior vesical artery, or for clamping or tying the uterine veins, which so often lie beneath the ureter, as well as over it. Very probably the account is not intended to be more than an outline, but even in that case the very casual reference to "the ligaturing off any masses of paravaginal cellular tissue" is misleading, inasmuch as, in our opinion, this is one of the most important of all the steps of the operation.

In the section on the sterilisation of women the authors say that it is proper advice in the case of women who are the subjects of nervous diseases which would be aggravated by pregnancy or child-bearing, or which would be transmitted to their offspring, to recommend sterilisation; but what these diseases are must be decided after consultation with a specialist. In a general text-book for students it is, we think, advisable to give, at any rate, some indication as to what these diseases are; it would be difficult to name many diseases in which such advice would be proper. The section on kraurosis vulvæ and leukoplakia has been revised in view of the work of Comyns Berkeley and Bonney on these subjects. Dr. E. Reginald Morton has contributed sections on the use of the X rays and radium in cervical cancer and in pruritus vulvæ, and the use of a pencil of frozen carbonic acid in urethral caruncle. We are surprised to find no mention of the treatment of uterine fibroids by radiotherapy.

The book as a whole is very good and a credit to its authors.

Manual of Medicine. By A. S. WOODWARK, M.D. Lond., M.R.C.P. Lond., Junior Curator of St. Bartholomew's Hospital Museum; Physician to the Royal Waterloo Hospital, &c. London, Edinburgh, and Glasgow: Henry Frowde and Hodder and Stoughton. 1912. Pp. 409. Price 10*s.* 6*d.*

THE author explains in his preface that "in contributing this little book to the enormous mass of medical literature at present in existence" he hopes to fulfil a twofold purpose—that of supplying a vade-mecum for the student clerking in the wards or out-patient department and that of a convenient reference-book for the busy practitioner. After a perusal of the volume we believe that to a member of the profession engaged in general practice this manual would be of considerable use, enabling him in a short time to refresh his memory as to the salient features of any particular disease. If a student would utilise the book as an addendum to a larger and more detailed work, then he also might find it of considerable value as giving a clear summary of the chief points in regard to the etiology, pathology, symptomatology, and treatment of any malady, but he would have to resist the temptation of letting it replace a more comprehensive text-book.

Dr. Woodwark has succeeded in condensing a large amount of information into a comparatively small space. The manner in which the subject matter is arranged renders any reference easy, and for the most part both the theoretical and practical considerations are fully up to the more modern views.

Brain and Spinal Cord. A Manual for the Study of the Morphology and Fibre-tracts of the Central Nervous System. By Dr. Med. EMIL VILLIGER, Privat-dozent in Neurology and Neuropathology in the University of Basel. Translated by GEORGE A. PIERSOL, M.D., Sc.D., Professor of Anatomy in the University of Pennsylvania. From the third German edition. With 232 illustrations, many of which are coloured. London and Philadelphia: J. B. Lippincott Company. 1912. Pp. 289. Price 16*s.* net.

Professor Piersol's translation of this well-known German work is welcome, for there is a clearness in the manner of presentation in this treatise which is not by any means universally present in descriptions of the brain and spinal cord. The book should be a real help to the student, for it bridges over in a satisfactory manner that gap which all too often exists in the student's knowledge between the arrangements of the tracts of the central nervous system, as demonstrated by the physiologist, and the gross structure of the brain and cord as displayed by the anatomist. For this reason alone it is a valuable work for the student, but it also possesses the merit of giving a short but clear account of the morphology and development of the central nervous system.

The illustrations are excellent, being that satisfactory blend of a diagrammatic clearness and an actual accuracy which makes the ideal of anatomical representation. Colour has been employed throughout with judgment and restraint, clearness of definition rather than attractive adornment having been the obvious guiding principle. A selected bibliography of the most important contributions to the literature has been added, and for the specialist references to more extended bibliographies are appended.

Handbuch der Nervenkrankheiten im Kindesalter. Von Prof. L. BRUNS, Oberarzt d. Hannoverschen Kinderheilanstalt; Prof. A. CRAMER, geh. Med.-Rat, Direktor d. kgl. Univ. Klinik f. psych. u. Nervenkrankh. in Göttingen; Prof. TH. ZIEHEN, geh. Med.-Rat, fr. Direktor d. psych. u. Nervenklinik d. kgl. Charité in Berlin. Mit 189 Abbildungen im Text und 3 Tafeln. Berlin: S. Karger. 1912. Pp. 980. Price 30 marks.

IN this imposing volume of almost a thousand pages the attempt has been made to produce a complete and authoritative text-book of nervous diseases as they affect children, and the names of the authors are a guarantee of the thoroughness and accuracy of the book as a whole. Some of the subjects are handled at considerable length: 40 pages are devoted to hysteria in childhood and 90 to epilepsy. Such diseases as are confined to or appear in early life—e.g., Werdnig-Hoffmann paralysis, Little's disease, infantile cerebral hemiplegia, to mention only a few—are excellently done. Rare diseases receive due attention, while common conditions, such as chorea, meningitis, and so on, are described in an exhaustive manner.

In a work of this size it is, perhaps, inevitable that there should be a certain amount of inequality in the contributions. The chapter on intracranial tumours is in the main satisfactory, yet in the diagnosis and symptomatology of tumours of the temporal lobe, corpus callosum, third ventricle—to refer to these only—we miss various points that might well have been included. In the chapter on chorea there is no reference to the occurrence of an extensor response, and no description, as far as we can see, of the choreic hand. In the article on poliomyelitis the most recent discoveries, in a

text-book of the pretensions of the one under review, might have been referred to a little more generously.

There are a good index and valuable bibliographical tables throughout which will be of great service to the neurologist. While the majority of the pathological illustrations are good, this cannot be said for all the clinical ones; some are woodcuts which have done duty for a generation now, and others are inadequate for the purpose intended. The volume, however, contains an immense amount of information, methodically arranged and well written, and we are sure it will be greatly appreciated by all interested in the study of diseases in children.

Leitfaden der Praktischen Kriegs-Chirurgie. Von Dr. WALTER VON OETTINGREN, Chirurg in Berlin-Wilmersdorf, s.z. Chefarzt des Livländischen Feldlazaretts vom roten Kreuz im Russisch-Japanischen Kriege. Dresden und Leipzig: Theodor Steinkopf. 1912. Pp. 377. Price, bound, 9.50 marks.

THE surgical art in war has an importance that can hardly be overrated, for modern methods of treatment make it possible to do much more for the wounded than could be done even 40 years ago. It is now recognised that the coated bullet does as a rule far less harm to the soft tissues than its predecessors did, which were larger and moved with a less velocity; and it has been found possible in many cases within a few weeks to replace a wounded man in the firing line if he has been treated in accordance with modern methods. Therefore, it is clearly of the greatest importance, even from a military point of view, that the surgery of war should be cultivated to its full extent. Many manuals have appeared on this subject, and this is one of the most recent, and also so far as it goes one of the best that have yet appeared. The author has had experience in the war between Russia and Japan, and the book is evidently largely based on the practical knowledge thus obtained.

The book begins with an account of the modern rifle and of the bullets generally employed; then the forms of wounds produced by these projectiles are described. An account is also given of the wounds resulting from the explosion of mines and from other injuries which may occur in war, even though not the result of firearms. The second section treats of the mode of healing of wounds, the importance of asepsis, and the modes of disinfection that can be employed on the field of battle. The most convenient forms of dressing for field use are described. The general treatment of wounds on the field, and of shock and hæmorrhage, general and local anæsthesia, the nursing of patients in war, their food, and their transport to base hospitals are considered in order. The second half of the book is devoted to a description of injuries of special parts of the body and the suitable treatment for them.

The book contains all that can reasonably be expected in the small space occupied, and it should prove very useful to all those connected with the treatment of the wounded in war, not only to the junior medical officers, but also to nurses and aids.

The Protein Element in Nutrition. By Major DAVID MCCAY, M.B. R.U.I., M.R.C.P. Lond., I.M.S., Professor of Physiology, Medical College, Calcutta. Illustrated. London: Edward Arnold. 1912. Pp. 216. Price 10*s.* 6*d.* net.

THE aim of the general editors of the International Medical Monographs Series is to set men of ripe experience and proved merit to sift the enormous output of modern research, each in his own department, and to give us the result in a balanced, concise, and accurate form. This aim has certainly been attained in handing over to Professor McCay a subject of such importance as the estimate of the proper amount of protein necessary for nutrition. The author has had exceptional opportunities of studying on a large scale the physique and food of many of the natives of India, and of investigating on a large scale the chemical intake and output of prisoners in Indian gaols. His researches have extended over many years, and this volume is partly an aggregation of important papers already published. The tone of argument exhibited is not at all aggressive, and the language is far more moderate than that often employed in discussions on dietetics. This very moderation serves to give force to a vast array of details skilfully marshalled, and to destructive criticism, which is occasionally employed.

The main argument is that the supposition that the natives of India are entirely, or even largely, vegetarians is untrue, and that when they are so it is only under the pressure of poverty. A huge mass of careful matter, dealing with the staple foods of the Tropics, is given in support of this view The chief areas of low protein dietaries in India are found in Madras and Lower Bengal, and both areas show a lower average of physical development than is found elsewhere. Professor McCay refutes carefully all other alleged causes except that of food. In the maintenance of his thesis the whole question of protein dietaries, the necessity and importance of protein, its metabolism, and the effects of low protein dietary in the Tropics, are very fully considered. The book, therefore, contains an enormous mass of interesting detail to students of the principal debated questions of diet, and the information is thoroughly well arranged. Professor McCay again takes up the cudgels against Professor Chittenden, though the last word has probably not been said on either side. The problem of the relation of the amount of nitrogen taken in to that excreted is not so simple a one as has been often asserted. The quality of the resultant tissues may be as important as the quantity estimated by mere weight. That an animal may be fed so as to increase its weight and not show tissues of valuable quality has been long recognised, and in the volume before us the same problem as applied to man is discussed carefully. Some highly interesting observations on the renal pathology of the grain-fed Bengali are quoted in the chapter dealing with the physique and expectation of life of those races and Eurasians.

The Bacteriology of Surface Waters in the Tropics. By WM. WESLEY CLEMESHA, M.B. Vict., D.P.H. Calcutta: Thacker, Spink and Co. London: E. and F. N. Spon. 1912. Pp. 161. Price Rs. 7.8.

BACTERIOLOGISTS, and more particularly those who are engaged upon the guarding of our water-supplies from pollution, will find this admirable essay well worth study, inasmuch as it sets forth the reasons why a standard adopted in England does not apply to the waters of tropical countries, where the germicidal properties of sunlight are a very potent factor. In this country, for example, when organisms are found in a water that give certain fermentative reactions they would be considered more objectionable than others which did not. The deduction is probably correct, but, as the author shows, this attitude would condemn nearly every drop of drinking water in India with probably no justification in the greater number of instances. In the classification of organisms a much more satisfactory method from the point of view of the water bacteriologist is to divide them according to their ability to live in water exposed to sunlight. Natural processes of self-purification make it incumbent to study the kind of organisms, rather than their number, in order to arrive at a satisfactory judgment. A concrete case is quoted. Two separate organisms of the "coli group" are present in water, one of which may be found in nature to multiply in water or to remain at the bottom of lakes for long periods. But the second organism may be clearly shown to disappear in a few days. The significance of these two organisms would clearly be different when looked at from the point of view of their presence in any sample of water. This illustration affords an example of the

value of a careful study of the natural phenomena of self-purification which discloses important facts relative to the life-history of individual species of fæcal organisms.

The classifying of organisms, on the other hand, into artificial groups according to their action on certain sugars conveys nothing of practical value. Classification, however, for the purpose of description is necessary, but what the author insists upon is that it is not logical to conclude that because all organisms ferment the same sugar it follows that they possess similar characteristics in other respects or behave similarly when passed into water and subjected to natural forces. He shows, in fact, that this is not the case, and the experimental evidence deduced is based upon such extremely careful work as to leave very little doubt that he has established his point. Of course, it may be asked why English methods have given such satisfactory results as to lead to their general adoption. To which question the author replies that in England practically any trace of pollution is dangerous. There is not time for any very elaborate self-purification to go on in most natural sources, and it is probable that a more detailed examination on the lines suggested by the author and his colleagues of the process of storage would show that the results obtained in England resemble those in India. It is, however, obvious that in questions of determining whether water is fit to drink or not the standard should err rather on the side of severity than on that of leniency.

The observations recorded in this book add very valuable material to our knowledge of the flora of water-supplies, and particularly in regard to their life-history and pathological significance.

Text-book of Ophthalmology in the Form of Clinical Lectures. By Dr. PAUL ROEMER, Professor of Ophthalmology, Greifswald. Translated by Dr. MATTHIAS LANCKTON FOSTER. Vols. II. and III. London: Rebman, Limited. 1912-13. Pp. 277-571, 573-896. Price 10*s.* 6*d.* each net.

Dr. Foster has brought his task of translating Professor Roemer's text-book of ophthalmology to a successful conclusion, and the work is now available for English-speaking students in a thoroughly good translation. We have already reviewed the original work and the first volume of the translation[1] and pointed out the type of student for whom they are likely to be specially useful. The volumes are admirably printed and illustrated.

Du Strabisme. By Dr. PIERRE LAGLEYZE, Professor of Opthalmology in the University of Buenos Aires. Paris: Jules Rousset. 1913. Pp. 409. Price 15 francs.

THIS work consists chiefly of an account of all the cases of squint which have been treated by the author, his methods of treatment, and a discussion of the pathogenesis of the complaint on familiar lines. Little attention is directed to orthoptic treatment, and the operative measures advocated are those generally in use.

LIBRARY TABLE.

Clinical Methods for Indian Students: A Guide for Students and General Practitioners in India in Diagnostic and Therapeutic Methods. By G. T. BIRDWOOD, M.D. Cantab., Major I.M.S., late Principal, Medical School, Agra; and Foreword by J. R. ROBERTS, F.R.C.S. Eng., C.I.E. Calcutta: Thacker, Spink, and Co. 1913. Pp. 171. Price Rs.2.8.—Major Birdwood's "Clinical Methods," we believe, will find a sphere of utility far beyond the confines of India. He has collected into one convenient handbook the clinical tests and main diagnostic laboratory processes which, for the most part, have to be sought in not always readily accessible books or scientific periodicals. Many of them, of course, are matters of general knowledge; but even these, the practitioner once well versed in the details, when he has occasion to revert to them only very infrequently, will probably have forgotten, and may be thankful for a brief categorical description of them; while many are of less common knowledge, though well established. The more the practitioner with a sound laboratory education can learn to rely on himself for those clinical tests that are not too complicated and do not need too elaborate an armamentarium for their performance, the better equipped he will become as a diagnostician, for clinical examination and laboratory examination are complementary the one to the other, and sound judgment comes not from regarding either separately, but from a judicious correction of each by the other. Among the subjects dealt with—the processes number 68 in all—are examinations of the blood, including cultivations and processes necessary in malaria, kala azar, tropical ulcer, typhoid and fevers of uncertain origin, method of examination for various pathogenic micro-organisms, examination of rats for plague, examination and identification of mosquitoes, examination of lochia, urine and fæces for germs, protozoa, and eggs of worms, and of hydatid fluid, lumbar and pleural puncture, estimation of the opsonic index and preparation and dosage of vaccines, the use of tuberculin and leprolin and of antitoxic sera, the taking of swabs, anaphylaxis, snake-bite and its treatment, salvarsan and syphilis, how to embalm a dead body, and notes on the use of the microscope, stains, and general laboratory processes. Each subject is dealt with in concise paragraphs, each step of any procedure being numbered in order of performance. The book is interleaved for notes. While some of the difficult processes—e.g., the preparation of vaccines and opsonic index calculations, Wassermann's test, and so forth—are best left, whenever possible, to the trained pathologist, a general knowledge of the method pursued will yet be an advantage to the practitioner. We would suggest that the plan adopted in section No. 5, on the counting of red blood corpuscles—viz., the enumeration of all the requisites for the operation—might with advantage be adopted much more generally through the book, but that it should precede, instead of following, the article to which it refers. More careful proof-reading would also be an advantage in future editions. It is true most of the errors we have noted are in the spelling of proper names and are not of practical importance; but their frequency leads to an uncomfortable feeling of insecurity, lest errors should be present in more important matters. We have not noted any such, however.

The Energy System of Matter. A Deduction from Terrestrial Energy Phenomena. By JAMES WEIR. With 12 diagrams. London: Longmans, Green and Co. 1912. Pp. 200. Price 6*s.* net.—The author had better speak for himself, and this he does, after an intimate study of natural phenomena, in the following words: "I have reached the conclusion that every physical phenomenon is due to the operation of energy transformations or energy transmissions embodied in material, and takes place under the action or influence of incepting energy fields." It appears that the main principles on which the present work is founded were broadly outlined in the same author's "Terrestrial Energy" in 1883, and also in a paper in 1892. Obviously he is distressed as to the present position of the problem that has attracted his attention. "Day by day it becomes more evident that not one of the many existing theories is adequate to the explanation of the known phenomena." The field of energetics is specially under his ban. Speculative methods are still rampant, he states, finding that they have become the

[1] THE LANCET, Oct. 26th, 1912, p. 1156.

fashion, or rather the fetich, of modern science. "It would seem that no experimental result can be of any value until it is deductively accommodated to some preconceived hypothesis, until it is embodied and under the sway of what is practically scientific dogma." Fortunately, the author does not propose "to add another thread to the already tangled skein of scientific theory." We express our concurrence. Those of our readers who are interested in the "principles of inception" may perhaps read the author's concluding sentence: "The finger of Nature ever points to closed energy circuits, to the earth as a complete and conservative system in which energy, mutable to the highest degree with respect to its plurality of form, attains to the perfection of permanence in its essential character and amount."

Studio su la Morte Apparente e la Morte Reale. By Dr. A. CREAZZO. Rome: Loescher and Co. 1913. Pp. 184. Price 3 lire.—From time to time both in the English and foreign press the public are treated to sensational accounts of persons supposed to have been buried alive. The medical profession as a whole is incredulous of the danger of apparent death, but Dr. Creazzo considers it none the less our duty to investigate the subject thoroughly and find some certain method of proving that death has really taken place in order to demonstrate after years of trial that the danger is purely imaginary. If this can be done a great service will have been rendered to humanity, and Dr. Creazzo has contributed in not a small measure to it. In this little work the author discusses such questions as latent biological activity, the autonomy of the various organs and functions, latent life in the higher organisms, the stages of death, the persistence of life in apparent death, and the phenomena of residual vitality. He reports some authentic and interesting cases of apparent death, and reviews the classical and secondary signs by which death is usually affirmed; among these, however, we find no mention of alterations produced in the rotundity of the pupil under digital pressure. He considers it proved that since the manifestation of life is to be found in intracellular bio-chemical processes, the whole individual does not die at a given moment, but the organism is gradually extinguished. Hence everyone who dies passes through a state of latent life, subdivided into apparent, relative, and intermediate death. The author believes in residual vitality and that there arrives a moment in which the individual ceases to have that small modicum of life which, theoretically at least, would be sufficient to reanimate it. Dr. Creazzo endorses the opinion expressed by Brouardel, that we have no sign or combination of signs which enable us in all cases to affirm with scientific certainty that death has taken place. His remedy consists in a more extensive and general application of the methods of Icard, especially the intravenous injection of fluorescin, which tinges the tissues if the circulation is still present, and the insertion into the nostrils of filter paper saturated with neutral acetate of lead, which blackens from the products of putrefaction. Other methods are described, but the two mentioned have the merit of simplicity and universal application in removing from the public mind the spectre of premature burial.

SUNSHINE HOME, HURSTPIERPOINT.—H.R.H. Princess Alexander of Teck on April 23rd visited Hurstpierpoint, a township at the foot of the Southdowns in Sussex, and there laid the foundation-stone of the chapel of the Sunshine Home. This institution began ten years ago as a small convalescent hospital with six beds. It was enlarged in 1905 and again in 1908. The Home is essentially a home of recovery for surgical cases (women and girls only) which are passed on from hospitals.

THE FINAL REPORT OF THE ROYAL COMMISSION ON UNIVERSITY EDUCATION IN LONDON.

II.[1]

PART III. of the report deals with the application of the principles of government for the University whose enunciation closed Part II. The financial and educational control of any constituent colleges and university departments is considered, as well as the constitution and general powers of the faculties and their relation to these bodies. The various faculties are then discussed; a table in each case shows the present teachers in the faculty and the institutions in London at present suitable for inclusion in the University as constituent colleges in the faculty. Constituent colleges may be established by the University, but any existing institution engaged in doing University work in one or more faculties, which is strong enough to comply with conditions of incorporation, and willing to transfer the financial and education control in respect of such faculties to the University, may become a constituent college to the indicated extent. The salaries of the professors and readers in the various faculties are set down at £600 to £1000 and £300 respectively.

The following is a summary of the recommendations in respect of the Faculty of Arts:—

The Faculty should consist of the vice-chancellor, the university professors, the honorary and associate professors, the university readers, and the honorary and associate readers in charge of departments dealing with subjects of study in respect of which no university professorship is in existence, and of such other teachers and officers appointed by the university as the faculty may coöpt. We do not think that the Faculty of Arts need include other persons.

The head of every department in a constituent college or university department in the Faculty of Arts should be either a university professor or a university reader with the salary, conditions of appointment, and tenure which we have laid down as proper to university teachers.

University College and King's College should become constituent colleges in the Faculty of Arts. But in order to fit them to fill this position adequately, further provision towards the cost of establishing university professorships and readerships and towards the maintenance of libraries is needed.

The London Day Training College should become the University Department of Education, provided the London County Council is willing to comply with the necessary conditions of university management.

Bedford College should become a constituent college in the Faculty of Arts, subject to its compliance with the conditions as to university management we lay down. Immediate further provision is needed towards the maintenance of the library.

The East London College should become a constituent college in the Faculty of Arts as soon as it has raised the necessary funds, provided its governing body is willing to agree to the necessary conditions of university management.

The Birkbeck College should be reconstituted so as to become a constituent college in the Faculty of Arts for evening students, subject to its compliance with the necessary conditions of university management, and to its abandoning its present day work and all its evening work below a university standard. Additional income for maintenance is needed to enable it to fulfil this purpose, amounting to at least £10,000 a year in respect of the two faculties of arts and science.

The new School of Oriental Studies should be established as the University Department of Oriental Studies. If the reconstitution of the University should be delayed, the instrument establishing the new school should make it clear that incorporation with the University when reconstituted is intended. Further provision for maintenance is needed for this school amounting to £10,000 a year.

The recommendations in respect of the Faculty of Science are no less succinct. The Faculty, it is suggested, should have an exactly similar constitution to that of the Faculty of Arts, but the payment of the professors is indicated upon the higher scale. The head of every department in a constituent college or university department in the Faculty shall be either the professor or the reader in the subject. The following are the other main recommendations:—

The Imperial College of Science and Technology should become a constituent college of the University in the Faculty of Science, provided the University is given the necessary educational and financial control.

University College and King's College should become constituent colleges in the Faculty of Science. But in order to fit them to fill this position additional funds are needed towards the cost of establishing university professorships and readerships, and towards the maintenance of laboratories.

King's College for Women should as soon as possible be constituted the University Department of Home Science and Economics or of Household and Social Science, and should, if possible, be placed in the

[1] No. I. was published in THE LANCET of April 26th, 1913, p. 1184.

Bloomsbury district in close proximity to the central university buildings and to the suggested new site for King's College.

The Royal Veterinary College should become, if possible, the University Department of Veterinary Science, subject to its compliance with the conditions as to university management we lay down, and to its abandoning the teaching of chemistry, biology, and physiology (including histology). Additional income is needed as soon as possible in order to make the professorships of medicine and surgery full-time appointments.

The Brown Animal Sanatory Institution should if possible be moved into close proximity to the Royal Veterinary College, and should in that case be placed under the management of the same committee as the Royal Veterinary College.

The Goldsmiths' College should continue to be a day training college for elementary school teachers, giving a two years' course of university training for the certificate of the Board of Education, but not preparing its students for degrees. Subject to the approval of the London County Council it might also continue to maintain the present school of art. It should abandon its present lectures and classes in science and in technological subjects.

The School of Pharmacy and the Finsbury Technical College should not be formally connected with the University.

With regard to Bedford College, the East London College, and the Birkbeck College, the recommendations are exactly the same as they were in the case of the Faculty of Arts.

The Faculty of Technology is considered at some length, very definite reasons being given for the views of the Commissioners that the foundation of a separate University of Technology, with the existing Imperial College of Science and Technology as its nucleus, would be a mistaken proceeding. The Commissioners remind us that the newly constituted University will differ from the existing one in many main features, and hope in their recommendations to satisfy both those who claim independence for the College of Science and those who do not wish to see the College separated from the University.

The main recommendations in respect of the Faculty of Technology are as follows:—

The Faculty should consist of the vice-chancellor, the university professors, the honorary and associate professors, the university readers and the honorary and associate readers in charge of departments dealing with subjects of study in respect of which no university professorship is in existence, and of such other teachers and officers appointed by the University as the Faculty may coöpt. The Faculty should also include persons with special scientific knowledge of the industries and professions with which the Faculty has relations. The numbers and mode of selection would be decided by the Senate after report by the committee referred to in the next recommendation.

The present Faculty of Engineering should be merged in a Faculty of wider scope, which should include all the instruction given by the University in Science as applied to industry and should be called the Faculty of Technology.

There should be a statutory committee of the Senate, entitled the Committee for Technology, to be entrusted, subject to the supreme control of the Senate, with the conduct and management of all the departments of the Faculty within the several constituent colleges of the University.

The Committee for Technology to be appointed annually would consist of the vice-chancellor *ex officio*; the rector of the Imperial College of Science and Technology *ex officio*; other persons, a bare majority of whom would be appointed by the Senate, including at least two representatives of the delegacies of University and King's College respectively; the remainder being appointed by the governing body of the Imperial College.

The Committee for Technology should always consist as to at least three-fourths of its members of men of affairs and persons with special scientific knowledge of the professions and industries concerned. A committee of 15, including the two *ex officio* members, would be consistent with this constitution and suitable in size for the purposes in view.

Subject to the approval of an annual budget and report by the Senate, the Committee for Technology should have control of all the funds and buildings available for the Imperial College and of all the funds and buildings at present available for the teaching of engineering in University College and King's College, together with any additional funds and buildings that may be assigned to it by the Senate.

The departments of engineering at University and King's Colleges, or at other institutions hereafter admitted as constituent colleges in the Faculty of Technology, should not be modified, abandoned, or transferred without giving the delegacies of those colleges the opportunity of being heard by the Senate of the University, whose decision in the matter will be final.

The Committee for Technology should submit its annual budget and report to the governing body of the Imperial College, and the Senate should consult the governing body before approving or rejecting them.

The existing arrangements for the management of the several constituent colleges of the Imperial College of Science and Technology should continue until they are modified by the Senate on the advice of the Committee for Technology, save that all future appointments to university professorships and readerships should be made by the Senate on the report of the committee after it has been advised by boards of advisers appointed in a manner similar to that at present followed by the Senate in appointing to university professorships.

The Imperial College of Science and Technology should become a constituent college of the University in the Faculty of Technology subject to the provisions laid down.

University College and King's College should become constituent colleges in the Faculty of Technology subject to the same provisions. But in order to fit them to fill this position adequately additional income is required for the establishment of university professorships and readerships.

The arrangements for headship of departments and salaries are similar to those in the previous two faculties, and the East London College is recommended for a constituent college as soon as it can raise the necessary funds, provided it will comply with the necessary conditions of university management.

The recommendations with regard to the Faculty of Economics are as follows:—

1. The faculty should consist of the vice-chancellor, the university professors, the honorary and associate professors, the university readers, and the honorary and associate readers in charge of departments dealing with subjects of study in respect of which no university professorship is in existence, and of such other teachers and officers appointed by the University as the faculty may coöpt. The faculty may also include persons with special knowledge of the professions and callings with which the faculty has relations. The numbers and mode of selection would be decided by the Senate.
2. The head of every department in a constituent college or university department in the Faculty of Economics should be either a university professor or a university reader with the salary, conditions of appointment, and tenure which we have laid down as proper to university teachers.
3. The School of Economics should become a constituent college in the Faculty of Economics, subject to its compliance with the conditions as to university management we lay down. But immediate additional funds are needed for salaries and for library maintenance.
4. The main teaching of the University in the Faculty of Economics should be centralised at the School of Economics.
5. The University Department of Ethnology should be placed for the present in the School of Economics.
6. The Foxwell Library of Economic Literature should be housed in the School of Economics.

The Faculty of Medicine comes next in order in the report. It is considered at greater length than the other faculties, and for the moment it will be more convenient to leave it aside and pass to the Faculty of Laws. With regard to this, it is pointed out that there ought to be a Faculty of Laws, but that at present there is no body of teachers in London to whom the title, status, and salary of university professors or readers in law have been assigned, or who have been recommended by a board of advisors for those titles. Absence of endowment is chiefly responsible for this, but the Commissioners consider that it would not be in the interests of the University or of the present teachers of law to confer the powers and privileges proper to a university faculty upon the present faculty. The teaching of law is not conducted in any separate institution, but there is a proposal to concentrate it at King's College, and when money is forthcoming for the appointment of professors and readers, whichever college provides the teaching will become a constituent college in the Faculty of Laws. The Commissioners point out that the whole body of law, including the law of England as it stands to-day, is capable of scientific treatment, and is a department of learning with which a university ought to deal. The most scientific treatment of it which a university can provide is the best foundation for professional work. Regarding the university as the real seat of learning, they hold that it is as the faculty of a university that the scientific study of law should be carried on in its relation to other departments of learning. The Faculty of Laws should be a superior faculty, they say, and it should be necessary to take a degree in arts or science before proceeding to a degree in law. But the degree in law has long been a first degree in London, and a faculty cannot be established at once, and the time for a change should therefore be left to the discretion of the University. The Faculties of Theology and Music are dealt with more briefly. The Commissioners recommend that the former faculty should be a superior one, and find that the constitution and purposes of the existing theological colleges are unsuitable for constituent colleges of the University. The Faculty of Music of the kind that has hitherto existed in the University of London the Commissioners consider useless. The granting of external degrees might be continued, and the professor should belong to the Faculty of Arts.

(To be continued.)

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—At a meeting this evening (Friday, May 2nd) in the society's rooms, West London Hospital, at 8.30 P.M., a paper will be read by Professor Frederick Hobday, F.R.C.V.S., on Observations upon Some of the Diseases Communicable from Animals to Man.

THE LANCET.

LONDON: SATURDAY, MAY 3, 1913.

The Duration of Protection Afforded by Vaccination, and the Importance of Dosage.

DURING the small-pox epidemics of last century, and particularly in the pandemic of 1871, there were few questions with which medical men were so familiar or to which so much attention was given as the evidence of the duration of the protective effect of vaccination against small-pox. It was customary to measure this by different criteria: the proportion of fatal to total cases at different ages, the proportion of mild or modified cases to total cases, and the relative incidence of small-pox on the vaccinated and unvaccinated at different periods of life. The conclusions which became generally accepted as a result of these observations still govern practice and are taught at the present day; but it is natural to inquire, during a period of long immunity from small-pox epidemics, and at a time when comparatively few men obtain their knowledge of the disease from direct observation, whether it is now necessary to revise them in consequence of changes in the type of small-pox, or of differences between modern and ancient vaccines and methods of vaccination, or on account of other causes which may have been at work. Dr. W. HANNA, assistant medical officer of health for the Port of Liverpool, has taken advantage of the systematic keeping of records in the Liverpool small-pox hospitals during the 1902–03 epidemic and subsequently, to make a critical examination of the facts in over 1100 small-pox cases, in their bearing on the problems to which we have referred, and by so doing he has rendered a very valuable service to medicine and public health.[1] The results, as a whole, accord very closely with those of the earlier periods. As regards case mortality at all ages, that of the natural disease—i.e., in the unvaccinated, which ranges from approximately 25 to 40 per cent.—was reduced by the power of vaccination to about 3 per cent. in those that have been well vaccinated. In the unvaccinated Dr. HANNA finds that it is persons at the extremes of life, mainly children under 10 years and old people, who suffer most; in the previously vaccinated he has no case at all in children under 3 years of age and no deaths under 20 years, but as age advances, the protective power of vaccination against death from small-pox and its power of modifying the severity of the disease are gradually lost. The fact that the duration of protection conferred by vaccination against attack by small-pox is much shorter than the duration of its power of modifying the disease is also well illustrated by the Liverpool figures; the influence of the latter can be traced far on into late life.

[1] Studies in Small-pox and Vaccination. By W. Hanna, M.A., M.D., D.P.H. Bristol: John Wright and Sons, Limited. 1913. Price 7s. 6d.

Vaccination may "take" and pass through a typical course when performed at any time between exposure to small-pox infection and the appearance of the rash if small-pox develops. During the first three days the degree of the protection thus conferred against attack is very high. Although Dr. HANNA does not find it absolute in those who are vaccinated for the first time during these early days of incubation, yet the course of the disease when it occurred in such cases was extremely mild. He is inclined to conclude that the modifying power of vaccination will be shown, even when the case has not been vaccinated until the date of onset of small-pox, and that modification may take place as a result of vaccination performed after the disease has developed. The data for the last conclusion are small, but the conclusion itself accords with modern knowledge of vaccines generally, and the question is well worth further study at small-pox hospitals.

Dr. HANNA'S observations on the significance of the area of vaccination scars are of special interest. There can be no doubt of the fact that the Liverpool experience bears out the statement that the scar area of vaccination has an important relation to the severity of small-pox; the larger the area the milder the character of the disease. It is, of course, important to take account of the natural growth of vaccination scars, which get larger as age advances until the 20–30 year age-period is reached, and then gradually become smaller, in all probability owing to atrophy of the scar tissue. Analysis of cases in terms of number and area of scars should therefore be particularly directed to age groupings, and it is in this way that the evidence of the great importance of securing a sufficient dosage of vaccine in the performance of vaccination is best brought out. Dr. HANNA'S little book, which contains some excellent illustrations of small-pox cases and of concurrent variola and vaccinia, will perhaps be in special demand by medical officers of health and public vaccinators, but it may cordially be recommended to a wider public.

Death Certification, Especially in Respect of Lunatics.

AT a recent meeting of the Medico-Psychological Association a paper was read by Dr. SIDNEY COUPLAND, Commissioner in Lunacy, upon the subject of the certification of deaths and their official registration. A highly interesting discussion followed, proving that the apology with which Dr. COUPLAND prefaced his communication was quite unnecessary. His justification for introducing for the consideration of the Association a subject having little obvious relation to the problems usually discussed at their meetings was complete. The changes in the regulations for the registration of deaths which have been introduced recently, with the object of securing greater uniformity in tabulation, and consequently greater accuracy in national statistical results, are fraught with real importance to all branches of medicine, while the duty of attesting the cause of death of a patient, which is imperative on every practitioner of medicine, is especially so in the case of the medical officers of lunatic asylums, who, moreover, possess ample opportunities for obtaining precise information. For

in these institutions the cause of death is verified by necropsy in at least three-fourths of the cases that terminate fatally.

Commenting on the recent issue by the Registrar-General of an "Official Manual of Causes of Death," respecting which a notice appeared in our columns at the time,[1] Dr. COUPLAND reviewed the history of death registration in this country from its establishment in 1838 down to the present date. It is familiar knowledge that the classification of diseases, with a view to the accurate registration of causes of death, originated with Dr. WILLIAM FARR, the distinguished founder of vital statistics. The classification which, after much patient labour and investigation, was adopted by him formed the basis of the first edition of the nomenclature of diseases issued in 1869 by the Royal College of Physicians of London, which body since that time have rendered great service to science by the decennial revision and publication of their nomenclature. At the request of the Geneva Statistical Congress in 1856 Dr. FARR, in coöperation with Dr. MARC D'ESPINE, prepared a report on the nomenclature and classification of disease, with the object of establishing an international system—a scheme which is now about to be realised. Several modifications of the original classification were adopted from time to time by Dr. FARR; and his successors, Dr. WILLIAM OGLE and Dr. JOHN TATHAM, have revised the nomenclature for use in the General Register Office in order to bring it into line with the decennial revisions of the Royal College of Physicians of London. In the Registrar-General's last annual report it was announced that the list of death-causes authorised by the International Commission of Paris in 1909 will be adopted in all future publications by Somerset House. This modification of the official nosology will bring English mortality records into line with those of other European countries; and as the vital statistics of England and Wales will henceforth be published for the same districts as those into which the country has been divided for purposes of sanitary administration, there is at the present a double effort towards harmony.

The Lunacy Commissioners, recognising the distinct expediency of adopting for institutional use a synopsis of death-causes in accordance with the tables in the national returns, have authorised a revised schedule for use in the reports of asylum medical officers, and this schedule came in for some criticism at the hands of the members of the Medico-Psychological Association. In certifying the cause of death probably the chief difficulty encountered is the ambiguity which has from the first attached to the expressions "primary" and "secondary" in relation to that event. And, for the reason that in the statutory records one cause alone can be tabulated, the difficulty referred to is obviously critical. This is the most often discussed point in our system of death certification. A code of rules has long been in use at the General Register Office to determine which of the causes of death assigned in the medical certificate could reasonably be regarded as the most important factor. In 1903 a similar code was compiled by an International Commission. For the first time, both these sets of rules are now published in the official manual, the study of which will be found instructive and helpful in death certification. From the manual we learn that there is a growing tendency among practitioners to give the more correct rendering of the term "primary" as principal, rather than as first in point of time; and to this practice Dr. COUPLAND advised his hearers to conform. As an aid to that end the certifying practitioner has now before him an authoritative definition of the terms in question. The wording of this definition has recently been settled after consultation with the Royal College of Physicians of London. It runs as follows: "By 'primary cause of death' is meant (in the case of death from disease) the disease present at the time of death, which initiated the train of events leading thereto, and not a mere secondary, contributory, or immediate cause, or a terminal condition or mode of death." Respecting the expression "secondary," inasmuch as differences of opinion are inevitable as to the precise meaning of the term "primary" in estimating the relative importance of one or other morbid states in causing death, it becomes necessary to keep in view those conditions which are noted as "secondary," since they find no place in statistics dealing with one cause only. And we may here record with satisfaction that the Registrar-General intends to publish from time to time subsidiary tables to include both groups, where the secondary cause is sufficiently important to warrant its tabulation.

In the more limited statistics of lunacy it is proposed in the future to ask for a record, in a separate column, of the total number of instances in which a disease is regarded as secondary. In that way it is hoped that a truer conception than the present may be arrived at concerning the relative frequency of each morbid condition sharing in the fatal issue. As illustrative of lunacy experience Dr. COUPLAND instanced, among others, the case of general paralysis of the insane, which accounts for so large a proportion of the deaths in asylums. It is noteworthy that although the return of this disease as the primary cause may generally be justified, in some cases it does clearly rank as secondary, when complicated, for example, by dysentery or phthisis. The same applies to epilepsy and disease of the brain and cord, serving to emphasise the importance of tabulating secondary as well as primary causes, if we wish for accurate knowledge of the prevalence of such affections. Respecting some other diseases which are exceptionally prevalent among the insane, as compared with the general population, the results of clinical experiences are recorded. Among these, next in importance to general paralysis, as contributory to an asylum death-rate, comes pulmonary tuberculosis, which accounts for 14 per cent. of the total asylum mortality as contrasted with 10 per cent. in the mortality of the rest of the community. On the other hand, cancer comes low in the list of fatal diseases among the insane. In the year 1910 the proportion of deaths from this cause among persons at ages above 25 years was 33 per 1000 in asylums as against 114 per 1000 among the rest of the community. But when the incidence is compared, of tuberculous phthisis and cancer, among equal numbers living respectively inside and outside asylums, we find, in the one case, a still greater disparity, and in the other an equally striking approximation in the respective rates.

[1] THE LANCET, Feb. 24th, 1912, p. 528.

Thus, in each 10,000 living the asylum deaths from phthisis were 127, that of persons outside asylums only 13. But in regard to cancer, the like ratio for the former was 29, for the latter 20, which would seem to show that, in spite of its relative infrequency as a cause of asylum mortality, the incidence of cancer is not really below the rate in the general community. Statistics are forthcoming from which it would appear that the prevalence of cancer is not favoured by agencies similar to those which favour the spread of tuberculosis; but the conclusions, based as they are on statistical comparisons of communities numerically unequal, must be guarded and undogmatic. Clearly such figures point the direction for future inquiry, and cannot be accepted as expressions of ultimate truth.

Annotations.

"Ne quid nimis."

THE DECLINING BIRTH-RATE IN GERMANY.

THE declining German birth-rate is a subject which has already for some time been engaging the active attention of the authorities, and it is generally recognised that the question has become one of national importance. In two Prussian provinces the authorities have gone so far as to forbid the usual publication in the daily papers of the names of the recently married and of those about to marry, in order to prevent the contracting parties being flooded with prospectuses and price-lists of anti-conceptional appliances. Already the fall in the birth-rate is beginning to be noticeable in the decreasing number of children entering the German elementary schools this year. The limitation of families, according to recent observations, is by no means confined to the so-called better classes; it is also being practised more and more by the skilled workmen. The total statistics for the whole of the German Empire for 1912 are not yet available, but from the figures already published for 42 of the large towns it is abundantly evident that in spite of the improvement in the death-rate the birth-rate continues to decline steadily. Compared with 1911, the decrease in the number of births during 1912 was particularly marked in Frankfort o/M., Neukölln, Schöneberg, and Wiesbaden. These are all prosperous towns; indeed, they are termed the "towns of the people with independent means," owing to the large number of well-to-do persons retired from business or duty who select these for a residence. Two are suburbs of Berlin, and one, Schöneberg, holds the record as regards decrease in the birth-rate. This decline is even more striking when the figures of ten years ago are compared with those for the past year. An illustration may be given for a few of the larger cities:—

	1902.		1912.	
	Total births.	Per 1000.	Total births.	Per 1000.
Munich	17,861	35·1	13,468	21·9
Leipzig	14,922	31·5	13,400	22·1
Dresden	12,712	31·5	11,301	20·3
Cologne	14,621	37·8	14,232	26·7
Breslau	14,424	33·4	13,961	26·4
Nuremberg	10,373	38·7	9,025	25·5
Hanover	6,574	27·0	6,371	20·3
Mannheim	6,211	42·6	5,823	28·7
Strassburg	4,685	30·0	3,963	24·4
Schöneberg	2,825	26·5	2,430	13·7

In the last named, the birth-rate in ten years has thus dropped by very nearly one-half. The above figures refer only to the number of infants born alive, leaving the number of stillborn entirely out of consideration. On the other hand, the decrease in the birth-rate is really greater than apparent from the above figures when it is borne in mind that all these towns have had within the same period to record a very great increase in population, due to the ever-increasing influx from the country. The natural increase in population in Germany—i.e., the surplus of births over deaths—at present amounts to about half a million annually.

THE TITLE OF "DOCTOR."

UNTIL the end of last year a by-law of the Royal College of Physicians of London ran thus: "No Fellow, Member, Extra-Licentiate, or Licentiate of the College shall *assume the title of doctor or* append to his name the title of doctor of medicine, or the letters of M.D. or any other letters indicating that he is a graduate of a university, unless he has obtained a degree entitling him to do so." By a resolution of the College passed on Dec. 12th of last year the words in italics have now been omitted. It is doubtful whether the full bearing of this change has been appreciated by the Licentiates. Hitherto they have been under a certain disadvantage—namely, that although they had passed a good qualifying examination yet if they did not also possess a university degree entitling them to do so they were forbidden to take the designation of doctor. The alteration of the by-law removes this disability, and they are now permitted to style themselves Dr. —— on doorplates, visiting cards, and so on, if they wish to do so. It must be distinctly understood, however, that this is only a courtesy title, or perhaps it might be termed an occupation or professional title, as distinguished from "doctor of medicine," which is an academic title. Nevertheless, we feel sure that the removal of the restriction to assume the title of doctor will be greatly appreciated by many of those directly concerned. Previously the distinction between practitioners who did and did not hold university degrees was rather an invidious one, as it tended to the idea that their professional skill and knowledge were similarly unequal, which was by no means necessarily the case; now without fear of any reproach for using a forbidden term the Licentiates of the Royal College of Physicians of London can adopt the professional title which is generally understood by the public to indicate that they are duly qualified practitioners of medicine.

THE DIET OF THE GLASGOW LABOURING CLASSES.

THE interesting report on the food of the labouring classes in Glasgow, which was referred to by our Glasgow correspondent recently, has now been issued by the authority of the corporation of that city. The inquiry, it will be remembered, deals with the diets of poor families from the points of view of physiological energy and of cost. The collection of the necessary evidence required great tact in dealing with the households concerned, and an infinity of care and exactitude in the preparation of the numerical factors afforded. The work was carried out by Miss Dorothy E. Lindsay, B.Sc., assisted by a small staff, working under the supervision of Professor D. Noel Paton. The method of work is the same as that carried out in Edinburgh in 1900; it consists in enumerating each household, and weighing, classifying, and pricing all the food consumed by that household during a given period. Sixty houses were selected from the poorest parts of the city, and they are arranged in seven groups according to variations in income, with three additional groups of inebriate parents and exotic racial distinctions (Hebrews and Italians). The articles of diet are arranged under the headings of proteins, fats, and carbohydrates, and their physiological value is stated in calories calculated in the usual way. In estimating the relative requirements

of men, women, and children in any given household, the standard used was Atwater's tables. By these tables the food consumption of any family is worked out in terms of "one labouring man" unit, women and children being recorded in terms of decimals. The proper average of diet is usually estimated at 3500 calories per man, but the total average found in this investigation was only 3163 calories, and even with the higher ranges of income the energy value of the food did not reach higher than 3467, and in some abnormal cases it was as low as 2700. The cost per man per day averaged 7·07*d.*, and in some instances it was as low as 6*d.* The principal foodstuffs were found to be bread, potatoes, beef, milk, sugar, and vegetables, and of the proteins consumed about two-thirds are vegetable protein. Hardly any oatmeal or peas or beans is used now in Glasgow among the poorer classes, and cheese is consumed in very small amounts. The remedies suggested by the investigators will unfortunately not commend themselves to the palates of the persons concerned. Bad cooking, bad marketing, and a bad choice of food are responsible rather than restricted means. The only practical improvement would be a return to a simple diet including much oatmeal, and it might be suggested more cheese in place of the expensive protein-rich animal foods, meat, fish, and eggs, which when procured are of inferior quality.

THE SPREAD OF PELLAGRA.

MUCH has been written in recent years concerning pellagra, more especially in the United States, where the disease seems to be spreading in certain localities, causing considerable uneasiness, not to say alarm, in the minds of many people. Numerous inquiries have been made with the view of definitely proving what is the origin of the malady, but, so far, without any marked success. A very instructive contribution on the subject has lately been published in our American contemporary *Public Health Reports*, in the issues of March 7th and 14th, by Passed Assistant Surgeon R. M. Grimm, of the Public Health Service, who undertook an investigation during the summers of 1911 and 1912 into the circumstances associated with pellagra cases in an area comprising portions of three States, Kentucky, South Carolina, and Georgia, where the disease was reported to be spreading. A large section of the population in this area are negroes. In the course of his inquiries Dr. Grimm conferred with 200 medical men practising in this region, and from them obtained notes of 1426 cases, 323 of which he personally interviewed. In the investigation which followed attention was paid to the general character of the classes of people attacked by pellagra, to occupation and economic circumstances, to the situation and sanitary condition of the patients' homes, to their food- and water-supplies, as also to the question of biting insects and their possible relation to the spread of the malady. It appears that the majority of the sufferers who were visited by Dr. Grimm belonged to families of slender means, whose general environment and conditions of life were of a very low standard. Most of them seemed to be living a hand-to-mouth existence, depending for their support on what they earned day by day. Most of the people affected belonged to the families of cotton-mill workers, miners, and artisans, while only 48 out of the 323 were of the agricultural class. Medical opinion was to the effect that these people were not receiving the proper quantity or quality of the food they needed, and in many families the dietary even when of proper quality received very hasty and incomplete culinary preparation. These people largely lived on articles of food bought from day to day at the small local grocery stores, where most of the stock consisted of articles which had undergone some process for their preservation, such as canning or desiccation. No constant difference could be discovered in the dietaries of the pellagrous and the non-pellagrous members of the same families. "Hominy and meal" seemed to be the form of "corn" most in use. As regards biting insects the great majority of the houses visited afforded evidence of infestation by these, including the common bed-bug. Mosquitoes are present in the area under investigation, and the ordinary house-fly is found practically in every house; they were observed to be especially numerous in any house where a pellagrous patient was confined to bed. Some of the local granaries were seen to be heavily infested by weevils and moths. In a number of places the simulium fly could be detected, sometimes in close association with pellagra cases. There are many running streams in the affected area, and none of the homes of the pellagrins seemed to be very far from running water. It is important to mention that besides the cases reported to Dr. Grimm he saw a number of other instances among the resident population presenting symptoms of a suspicious sort suggestive of pellagra. They were, in fact, on the borderline, possibly in the earlier stages of the disease, but to say that they were actually cases of pellagra was not easy. There are certain conditions which seemingly predispose to pellagra through a lowering of the body's powers of resistance, such as hard work, worry, grief, or some previous illness. Enlarged thyroid was seen in some female pellagrins, but it was not constant. It is noteworthy that more cases of pellagra were found among the white population than among the negroes, and that more females of each race were attacked than males, and for this curious circumstance no satisfactory explanation is as yet forthcoming. When blacks suffer from pellagra their case mortality is higher than that of the whites, as also is the insanity incidence rate, males having a higher rate in this respect than females. Dr. Grimm, in conclusion, admits that the evidence he has collected does not afford proof of a relationship between the character of the food-supply and pellagra, but he insists that no investigation into the etiology of this disease can ignore the nature of the dietary of the persons attacked. On the other hand, the possibility of some insect playing a part in the dissemination of the disease does not seem to be inconsistent with the facts collected. Further investigations on a large scale are suggested by Dr. Grimm, and no one will deny the need for such inquiries, so that the etiology of this puzzling disease may be elucidated and that measures of prevention may be formulated without unnecessary delay.

OBSERVATION IN THE STREET.

A PRETTY argument might be waged upon the merits of a town walk and a country one as stimulants to observation. We can imagine the town advocate declaring that if he walked a country road in the winter there was really nothing for him to notice but the bareness of the hedges and the trees. Even in the kindlier seasons he can find comparatively little to see or hear. The old truism is illustrated that we only see what we look for, and the townsman in the country does not know what to look for nor where to look for it. The countryman in town is in another case. So much is thrust upon his observation that he is overwhelmed, and he also sees nothing, but for an opposite reason. His wits, moreover, are entirely occupied with avoiding a catastrophe from motor-'buses and taxicabs when he crosses a road or from the innumerable pedestrians when he keeps to the pavement. Yet to the initiated safe progress becomes an unconscious habit, and the eyes and brain are at liberty to observe. What scope and variety of objects and of persons a London walk affords is too little appreciated by most who pass along the streets. What do most of these people look at as they go? It is an

interesting question, and the regrettable fact is that if a hundred persons who walked down Regent-street were asked at Piccadilly what they had been looking at since they left Oxford Circus, probably about 90 would reply, "Nothing in particular"; if they were truthful that is to say, which is hardly to be expected in so large a proportion. The ten observant folk would, we imagine, all be women who had been looking in the shop windows. They had walked with a definite object in view. They knew, more or less, what they were looking for, and they certainly knew where to look for it. Consequently their walk was a practice in observation, whereas for the other 90 it was a lost opportunity. There is great pleasure, no doubt, in merely walking along and letting the eyes and thoughts wander carelessly and unreflectingly. Such an excursion provides, at any rate, gentle exercise for the body and almost complete rest for the mind. But to him who walks and looks for something definite the street affords a finer recreation. If he looks for character, for types of nationality, for distinctive evidences of profession, for symptoms of disease, even for traits of fashion, what an enlightenment is his stroll. Instead of a vague and slightly annoying rabble that a little interferes with his progress the crowd of passers-by becomes a number of units, each full of interest and meriting the quickest and closest observation. The whole value of the street is altered. Instead of being "a boy among the pebbles" our observer becomes a geologist on the beach. He has something to look for and an endless field of observation in which to look for it. Happy is he whose training has taught him to observe, and there is no item of a medical education that more deserves our gratitude than this.

BILATERAL CEREBRAL ABSCESS INVOLVING THE MOTOR AREAS.

FEW cases of symmetrical abscesses of the brain have been recorded. In the *St. Paul Medical Journal* for April Dr. W. A. Dennis has reported a case in which each motor area was involved, producing practically complete double hemiplegia. A youth, aged 18 years, was transferred from the medical to the surgical service of the University Hospital on Feb. 2nd, 1912, with the diagnosis of localised left pyo-pneumothorax communicating with a bronchus. On the 5th, 3 in. of the eighth rib were resected, several ounces of thick foul pus were evacuated, and the cavity, which was found to involve the lung substance, was drained. The temperature, which had been 102°–103° F. in the evening, quickly dropped to normal, and the offensive expectoration, which had been profuse, diminished. The patient got up and was greatly improved, though the discharge from the wound remained profuse. On the 24th he had an attack of aphasia characterised by a fixed stare and the repetition of the words "water" and "what." He seemed unable to form a sentence. On the next morning he felt well, but in the afternoon a similar attack, lasting about a minute, occurred. On the 27th there was another attack with rigidity of the right hand. Cerebral abscess was then diagnosed. On the following day another attack of aphasia occurred, and he appeared to be paralysed on the right side. But after this he talked intelligently for a few minutes and ate his dinner. Soon he became aphasic, the fingers of the right hand twitched, and the arm was held stiff. Half an hour later there was a general convulsion and the whole body twitched about for four minutes, during which he was unconscious. After three hours he was much better and fully conscious. On the 29th all he complained of was headache on the right side of the head. He was bright, talked normally, and had no paralysis. A neurologist who saw him in consultation diagnosed abscess beginning to form in the left temporal lobe. The patient did not seem in a favourable condition for operation, which was postponed for a few days. Then other symptoms developed. On March 4th the left hand felt numb. On the 5th the left arm was jerked about for five minutes, and on the next day it was paralysed. Later in the day there was a general convulsion more marked on the right side and paralysis of the whole body followed. Still later in the day he could move the left arm and leg, and again still later the arm became paralysed. Two days afterwards he could use it again. He often complained of headache, and vomiting occurred. There were double optic neuritis and incontinence of urine. The temperature was subnormal much of the time, and the pulse varied from 60 to 90. On the 16th an osteoplastic flap was made over the left motor area, and at the depth of about 2 cm. an abscess containing 1½ ounces of thick offensive pus was found and drained. The abscess lay beneath the ascending frontal convolution and extended downward and backward for about 3 cm. Next day the temperature was normal and the pulse 86. He could move both legs and the right hand, but the left hand was paralysed. He could not speak, but appeared to understand what was said to him. On the 19th the pulse suddenly rose to 160, and from this time until death, which took place on the 30th, his condition was critical. The right arm was often used but never the left. The right pupil was dilated. An abscess in the right motor area was suspected and the question of a second operation was considered, but was not performed on account of the bad condition of the patient and the opinion of the neurologist that this was due to extension of pus towards the base of the brain. At the necropsy the drained abscess was found almost obliterated. In the corresponding area on the right side was an abscess rather larger than the one on the left side. In the anterior pole of the left frontal lobe was a third small abscess. Each abscess was distinctly limited by a capsule and there were no signs of involvement of the meninges or ventricles. As in most cases of multiple abscess of the brain, the lesions in this case were embolic from a primary focus in the chest.

A RECENT ANALYSIS OF ASPARAGUS.

THE popularity of asparagus makes a fresh analysis of it interesting. When we remember that asparagus belongs to the same family of plants—the liliaceæ—as do the garlic, leek, and onion, we may expect to find some constituents in common. Sulphur combined in the form of an oil is, perhaps, the most prominent of these, but in asparagus it is not so obvious to the taste and smell as it is in the raw onion. Curiously enough, however, when the tender shoots of asparagus are left in water for a few days we find that the smell of onions quickly develops and after a time becomes very marked. Again, if asparagus is extracted with ether an oil is obtained which has a faint smell of the raw shoot. This oil, on analysis, proves to contain sulphur. It is probably this sulphur constituent which gives the well-known peculiar odour to the kidney excretion after a diet of asparagus, and not the other principle peculiar to asparagus, asparagin. There is reason for believing, however, that asparagin has decidedly diuretic properties. According to our analysis it occurs in the tender shoots to the extent of about 0·5 per cent. As to the actual nutritive value of asparagus, this must be placed low, especially in view of the fact that what nutritives exist in the plant are rapidly extracted by boiling and even by cold water. Approximately only a tenth part of the raw asparagus shoot is solid matter, and as much as 70 per cent. of this is soluble in cold water, while quite 80 per cent. is soluble in boiling water. It follows that in the process of cooking a very considerable

quantity of the raw material is left behind in the water in which it has been boiled. Since the constituents so taken out consist of sugars, gums, proteins, and practically all the phosphatic salts, there is much to be said in favour of the nutritive quality of asparagus soup if in its preparation the boiled liquor is utilised. The sugar in asparagus amounts to an average of 3·6 per cent., the proteins (calculated on total nitrogen) to 3·8 per cent., the fibre to 1 per cent., and the mineral matter to 0·80 per cent. The green variety contains much less fibre than the white, and the green also yields more soluble matter to boiling, and still more to cold, water than the fat white stick. An important constituent, again, of the tender shoot of asparagus is the basic body vitamine. This occurs in the growing tips of all vegetables, but particularly so in that of asparagus. To sum up, the nutritive value of asparagus in the form in which it is invariably consumed—viz., after boiling for 20 minutes—is too small to be of any importance, and its use to the exclusion of other elements would mean a starvation diet. All that can be claimed for it is that it is a particularly pleasing adjunct to the meal, and palatability, we know, is an undoubted assistance to the processes of nutrition.

THE ENDEMICITY OF YELLOW FEVER ON THE WEST COAST.

THE subject of yellow fever and its endemicity in certain regions of the world has of late years been receiving a good deal of attention, but progress in arriving at definite conclusions has been greatly hindered by the difficulties at present associated with the diagnosis of the disease. In THE LANCET of April 19th we offered some comments upon an official report which had raised the question whether yellow fever was not still endemic in the island of Jamaica. Since then another official report[1] issued by the Colonial Office has been brought to our notice dealing with certain alleged outbreaks of the disease in several of our colonies along the West Coast of Africa during 1910 and 1911. This report, compiled from material supplied by various officers of the medical, sanitary, and other departments of the colonies concerned, and supplemented by the researches of experts, was begun by Dr. A. E. Horn while attached to the Colonial Office, and has been completed by his successor, Mr. T. F. G. Mayer, of the West African Medical Staff. The reported outbreaks occurred in four colonies—namely, the Gambia, Sierra Leone, the Gold Coast, and Nigeria, comprising altogether 64 cases, of which 52, or 81·2 per cent., were fatal. Of those attacked 40 were Europeans, among whom there were 34 deaths, giving a case mortality rate of 85 per cent.; 12 were Syrian traders, and of these 11 died (91·7 per cent.), and 12 were negroes, of whom 7, or 58·3 per cent., proved fatal. This racial distribution of the illness is quite in keeping with previous experience of yellow fever outbreaks elsewhere, for the newly arrived Europeans and Syrians formed the bulk of the patients. As regards the negroes who suffered, it is well known that the natives of endemic areas acquire in early life an immunity from yellow fever by mild attacks of the malady which sometimes pass under various names, such as endemial, inflammatory, or acclimatising fever. In West Africa it is often necessary to bring labourers from "healthy" districts in the interior—i.e., where there is no endemic yellow fever—to work on the coast, and it is obvious that these men would be non-immunes like the Europeans and Syrians. Mr. Mayer in his introduction intimates that the readers of the report will have to form their own conclusions as to the correctness of the diagnosis of the cases reported as yellow fever, and with a view to render assistance to the reader ample details—clinical, pathological, and other—are supplied together with temperature charts in almost every instance. In an appendix to the report Dr. R. H. Kennan, senior sanitary officer, Sierra Leone, gives a description of a malady frequently epidemic among the natives of the colony and elsewhere and known as "bayloo," "wayloo," or "burra." This appears to be an acute infection characterised by fever, jaundice, enlargement of the liver and spleen, and accompanied by nephritic and nervous symptoms. It has been suggested that "bayloo" may be a mild form of yellow fever, but Dr. J. W. Collett, the senior medical officer, thinks that the grounds for considering it a modified manifestation of that disease are at present insufficient. From various other sources we learn that in late years outbreaks of yellow fever have occurred in other localities along the West Coast of Africa, including the French colony of Senegal, Portuguese Guinea, German Togoland, and French Dahomey. So that it may be said that in an area along the coast of West Africa extending southwards from the Port of St. Louis in Senegal as far as Lagos in Nigeria, a distance of more than 2000 miles, yellow fever has been more or less prevalent for some time. In this area it is noteworthy that the insect transmitter of yellow fever, the stegomyia fasciata, has been observed in abundance. It is therefore probable that the region above indicated is to be regarded as one of the areas of the world where yellow fever is endemic. It is probable that the reported cases in our own, as well as in the foreign, colonies of West Africa, do not correctly represent the full incidence of the disease. The late Sir Rubert Boyce, it may be remembered, drew attention to the reluctance that existed in notifying yellow fever, and the tendency for each colony, if a case occurred, to blame some other one for having supplied the infection to it. Moreover, he asserted that numbers of cases of yellow fever in Africa were wrongly diagnosed, and that many of them were treated as bilious remittent fever or other illness. Unfortunately, as we have already stated, yellow fever is at all times a difficult disease to diagnose, particularly in its milder forms; and as yet no definite specific organism has been discovered by which identification of the malady might be established with certainty, unless, indeed, the so-called yellow fever body isolated and described by Dr. H. Seidelin is to be accepted as the specific parasite of the disease. In view of these and other difficulties, the Colonial Office have for some time been seriously considering the situation, and we learnt recently with much satisfaction that a great effort is to be made to solve the yellow fever problem in West Africa by the appointment of a commission of distinguished experts, among whom the skilled clinician, the modern etiologist, the scientific pathologist, and the practical sanitarian are represented. We may reasonably hope that before very long the labours of this commission will succeed in throwing a flood of fresh light upon the yellow fever problem, and that soon a great advance in our knowledge of this disease will be effected.

[1] West Africa: Report on Certain Outbreaks of Yellow Fever in 1910 and 1911. With 6 maps. London: Waterlow and Sons. 1913. Pp. 108.

ETHER IN THE TROPICS.

IT is a widely held opinion that in tropical climates ether cannot be used as an anæsthetic. Very often the reason offered for not using ether is that "chloroform is so safe out there," but close questioning may lead to the conviction that safety of chloroform is sometimes synonymous with imperfect anæsthesia for native patients. We very much doubt whether chloroform unscientifically administered to a deep degree of narcosis is less dangerous in India, say, than it is in England, and we are inclined to be equally sceptical as to the impossibility of employing ether. The temperature of operating theatres in Europe is fairly high.

The artificially heated theatre here should not, we imagine, be much cooler than the artificially cooled theatre in a tropical country. Ether is freely used by evaporating methods in European and American operating theatres, and probably could be equally employed in many places where it is at present regarded as taboo. We are strengthened in this opinion by an article in the *Bulletin of the Manila Medical Society* (February, 1913). This is from the pen of the anæsthetist to the Philippine General Hospital, who writes with an experience of 19 months in Manila, during which time there were some 1600 cases. The writer remarks that it was surprising to find ether being very satisfactorily administered in Manila. She (for the writer is a woman) went from Chicago, where opinion as to the use of ether in the tropics is much the same as that to which we have referred above. Guided by what she saw, she instituted the giving of ether by the drop method, to which she was accustomed at home. This she finds quite satisfactory with the proviso that considerably—in her opinion from 15 to 20 per cent.—more ether is required per patient than in cooler climes. The only real difficulty, as might be anticipated, is in the storing of the ether. The tin cans so commonly employed in America were not sufficiently air-tight and much evaporation of ether took place from them. The ideal vessel she describes as a glass container. The boiling point of ether is about 95° F. and it should not be difficult in many tropical places to store ether where this temperature would not be reached, nor to procure it in bottles that would allow no leakage if so stored.

A NEW ANTITYPHOID VACCINE.

Of the vaccines which have hitherto been used as prophylactics against typhoid fever, the one prepared by Pfeiffer and Kolle and employed in Germany consists in agar cultures of the bacilli killed by heat, while Wright's preparation is made from bouillon cultures sterilised, according to the original method, by heating to 60° C., or in Harrison's modification of the procedure to a temperature of 53° C. The latter thus contains, in all probability, soluble products of the bacteria formed in the fluid culture medium, and these may be of some importance in the production of immunity, since Levy and Fornet found that filtrates of typhoid cultures had not only an aggressive but also a protective action. A recent modification in the mode of preparing vaccine has been carried out by Levy and Bruch,[1] who make use of the power possessed by some neutral salts to kill bacteria by the altered osmotic conditions brought about by the addition of suitable quantities to fluid media, the bodies of the organisms being broken up and disintegrated. Levy and Bruch have used galactose for this purpose, as this sugar can be sterilised by heat without undergoing alteration, adding 1 part of galactose to 3 of a broth culture of typhoid bacilli, evaporating the solution to syrup, and finally drying *in vacuo*. The resulting white powder is further ground up; for use it is dissolved in distilled water. Comparative experiments on guinea-pigs with Wright's preparation, with a similar vaccine in which the bacilli were killed with carbolic acid, and with the dry vaccine prepared as above described, showed this last to have superior immunising power, while its injection gave rise to little reaction. Its toxicity was greater than that of the other preparations, possibly showing that the active substances were less altered when obtained by this means than by heat or antiseptics. This toxicity diminished with keeping, while the immunising power of the powder remained intact. The writers believe that a dry vaccine of this nature will be of considerable advantage for foreign and colonial use, as it keeps well in spite of high temperatures. No trial of the new vaccine on human subjects is recorded.

[1] Arbeiten aus dem Kaiserlichen Gesundheitsamte, 1913, Band xliv., Heft 1, p. 150.

INDUSTRIAL DUST EXPLOSIONS.

An interesting report has been issued from the Home Office this week on the inflammability and capacity for transmitting explosions of carbonaceous dusts liable to be generated on premises under the control of the Factory and Workshop Acts. According to the author of the report, Dr. R. U. Wheeler, the chemist attached to the Explosions in Coal Mines Committee, the dusts examined may be divided into three classes—viz.: (1) those which ignite and propagate flame readily, the source of heat required for ignition being comparatively small, e.g., a lighted match; (2) those which are readily ignited, but which require a source of heat of large size and temperature, e.g., an electric arc, or the flame of a Bunsen burner; and (3) those which do not appear to be capable of propagating flame under any conditions likely to be present in a factory. The investigation was prompted by two serious dust explosions which occurred in November, 1911, at a provender mill in Glasgow, and at an oil-cake factory in Liverpool. Altogether 66 samples of dust were examined, which were not specially selected, but taken from beams, ledges, or other projections by the factory inspectors in the course of their inspections. In Class I., sugar, dextrine, starch, and cocoa proved to be most dangerous. This class includes also flour, tea, chicory, and cork. In Class II., samples of shoddy, being of a fluffy nature, did not readily form a cloud in air, but they contained a sufficient quantity of fine material to render them dangerous when in bulk. In the same class a sample of shellac contained over 60 per cent. of incombustible matter, but all the same was inflammable. This class included also oil cake, sawdust, horn meal, and mustard. In Class III., some samples were more or less readily inflammable, but showed no signs of being capable of propagating flame. The report is a valuable one, and indicates clearly those manufactures in which dust may easily be a source of danger from its inflammable nature and tendency to explode. We hope the matter will receive that careful consideration which it demands.

THE VENTRICLE-STRIPPING OPERATION IN HORSES.

About a year ago we referred to the results obtained in "roaring" horses by the ventricle-stripping operation, first made a success by Professor Williams of the Veterinary Faculty of Cornell University, U.S.A., and introduced into this country by Professor Hobday. The operation is now being practised in America, France, Germany, Austria, Italy, Belgium, Holland, and Hungary. In the *Veterinary Journal* for April Professor Hobday, whose own cases now number 695, continues his proposed tracing of the subsequent history of 100 of these for four or five consecutive years—a good average period of useful life for a horse of the hunter class. The first two were operated on in September, 1909, and it is interesting to note that they are still at work to the satisfaction of their respective owners. This list of Professor Hobday's—which refers to the same horses as those in the lists previously published in January, 1911, and April, 1912, respectively—falsifies beyond doubt the pessimistic predictions with which the operation was greeted on its introduction, indicating as it does the permanence of the results attained. Professor Hobday's experience leads him to the opinion that in fully 75 per cent. of cases the operation will convert a roaring galloper from a useless into a useful beast, while for

carriage and cart horses the proportion of success goes as high as 90 or even 95 per cent. In one point Professor Hobday has modified his opinion, for whereas he formerly allowed horses to be tested at the gallop a month after operation, he is now convinced that this is unwise and that a minimum of two months' rest or, even three, should occur before allowing violent exercise. One possible source of disquietude is dispelled—viz., the fear that the operation may become a "dealer's" operation; for while the horse may gallop noiselessly enough to pass a test for wind, it rarely loses the habit of "grunting" when hard pressed.

THE Right Hon. A. J. Balfour, M.P., will open the new school buildings of Guy's Hospital Medical School on Tuesday afternoon, June 3rd. The opening ceremony will be performed in the Physiological Theatre, after luncheon in the Court Room of the hospital.

MAN'S MENTAL EVOLUTION, PAST AND FUTURE.

BY HARRY CAMPBELL, M.D., B.S. LOND., F.R.C.P. LOND.,
PHYSICIAN TO THE WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM.

I.

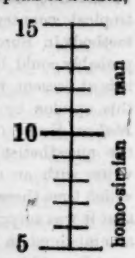
I PROPOSE in this essay briefly to consider the factors which have determined man's mental evolution; to seek to discover how far these factors are still in operation, how far they are now being supplemented, or are likely to be supplemented in the future, by others; and to attempt a forecast of his mental destiny. Surely than this no study can be more attractive; none, considering the issues involved, more important.

I shall endeavour to elucidate the laws by which mental evolution takes place, to explain why in some animal species it has advanced further than in others—why, e.g., the primates have reached a higher mental level than the other mammals, and why among the primates man has outstripped all others in the mental race. How came it—and the question must have occurred to many—that of several anthropoid species, one particular species shot ahead in mental development and quadrupled its brain mass, while the gorilla, the ourang, and the chimpanzee have during the long years of man's ascent remained on the same rung of the mental ladder?

If an extra-mundane anatomist, a Martian, let us say, acquainted with the laws of organic evolution, but knowing nothing of this world's animals, were given for examination a man, a giraffe, and a male narwhal, he could not fail to be struck by the large size of the man's brain, the great length of the giraffe's neck, and the enormous development of the upper lateral incisor of the narwhal. He would doubtless argue, and rightly, that in each case the exaggerated feature served some special adaptive purpose, and that it must have evolved in accordance with the laws pertaining to biological evolution.

There is, indeed, no doubt that the brain has evolved in accordance with those laws, and inasmuch as it is the organ of mind, we must conclude that mind has evolved on the same lines. Mental evolution has therefore to be studied in the same way as morphological evolution, and the problems for solution are just as susceptible of elucidation in the one case as in the other.

It is convenient to indicate the successive phases of man's evolution from the ape in terms of cranial capacity, according to a plan which I have already suggested.[1] Briefly, it is this: assuming the cranial capacity of the highest anthropoid to be 500 cubic centimetres and of the average European to be 1500 cubic centimetres, we may mount upwards by successive grades of 500 to 1500 cubic centimetres, or (striking out the noughts) from 5 to 15 (see Figure); and if, further, we suppose the rank of homo to have been reached at the tenth grade, the pre-human between the fifth and the tenth grade may conveniently be designated the homo-simian. We can thus speak of a sixth, seventh, eighth, and ninth homo-simian, and of a tenth, eleventh, twelfth, thirteenth, fourteenth, and fifteenth homo or man. On this plan I assume, it will be observed, that the anthropoid emerged by imperceptible degrees through the homo-simians into the human, that he, so to speak, gradually clambered up the ladder by grasping it at the sides, rather than mounted upwards by a series of leaps from rung to rung.



It is difficult to forbear raising here the question whether we are to regard the evolving human as having passed through one species or more than one in his mental ascent. Are we, e.g., to regard the attainment of each successive rung as equivalent to the origin of a new species? or are we to suppose that only one species—the homo-simian—separated the ape from man? These are questions I must leave the zoologist to answer.

At the fifth stage man's anthropoid ancestor abandoned an arboreal for a terrestrial life, being led to this, I suggest, in the search of food, and especially of animal food, which from this time onward right up to the period of fixed agriculture he diligently pursued. At first he was able to secure little more than vermin: the homo-simian was essentially a *vermin-hunting period*. Later he came to hunt game. We may assume that by the tenth grade (representing a primitive type of man, capable of rudimentary language) he had already learnt to stalk, and possibly even to trap, the larger game; and thus was initiated what may be termed the *genuine hunting period*.

Our Social Hierarchy a Mental Hierarchy.

Among primitive tribes the mental level is much the same throughout the whole tribe. While there is always a tendency for some amount of sorting into mental grades—a man of commanding ability, e.g., is not likely to occupy a subordinate position in the tribe—there is no well-developed mental hierarchy. On the other hand, in civilised nations such as our own there has for many generations been taking place an automatic sorting of the population into grades. These constitute not merely a social but a mental hierarchy—one, namely, in which innate mental endowment increases from below upwards. This results from the fact that each social class, except the lowest, is continually being recruited from the best mental types from lower down, notably from the grade immediately below it, while there is a tendency for the inferior types in each class to filter downwards. The result is that among civilised peoples the social grades may be roughly classified as follows: (1) the aristocracy, or hereditary leisured class; (2) the upper middle class (professional men, merchants, &c.); (3) the lower middle class (small tradesmen, clerks, &c.); (4) the upper working class (skilled workmen); (5) the lower working class (unskilled workmen); and (6) the vagrant and unemployable class (with which may be grouped criminals and the worst decadents).

The mental hierarchy which these classes represent is one not only of intellect but of character. Man needs not only brains but grit in order to succeed in life—honesty, sobriety, industry, self-discipline, backed up by a spirit of emulation, and, above all, by will-power. Indeed, if well equipped in these moral respects a man with no more than average intellectual ability may raise himself well above his fellows; but success can be confidently predicted if character is backed by ability: those possessed of both brains and grit are bound to mount upwards. It follows that the members of each social class are, on the average, more richly endowed in both these respects than those of the class immediately below. I refer, of course, to congenital endowment.[2]

In the establishment of this mental hierarchy the woman has played her part as well as the man. Leaving out of consideration the influence of beauty—for it does not concern us here—the possession of wealth has been, and is, the main

[1] The Evolution of Man's Diet, THE LANCET, Sept. 10th, et seq., 1904.

[2] It may be argued that the rise in the mental level stops short of the aristocratic class, but in estimating the congenital mental endowment of this class it has to be remembered that its members are placed at a great disadvantage by being leisured. With no incentive to struggle on the one hand, and abundance of temptation on the other, their conditions are not calculated to bring out the best that is in them.

qualification for the woman's social ascent. Thus a large number of rich heiresses are drafted from the upper middle to the aristocratic class, and this is to the mental advantage of the latter, since middle class heiresses, as the children or relatives of men who have acquired wealth, tend to inherit their wealth-getting capacity, which capacity, as we have already hinted, generally implies both brains and character.

It will thus be seen that in the case of a community like our own a process of selection is at work sorting individuals into mental grades. There is a mental struggle for worldly success, and it increases in stringency from the lower working class upwards. A higher mental excellence is needed to secure an average success in the upper middle class, e.g., than in the unskilled working class. But although ascents and descents from one class to another are continually taking place, there is, nevertheless, a certain stability in the composition of each class. People generally marry in their own class, and most of those belonging to a particular class come of an ancestry extending back through many generations of that class. Now this marriage between individuals belonging to somewhat the same mental level must tend to maintain their class at the same level. In the unskilled working class, e.g., there is intermarriage of the inferior, and in the upper middle class intermarriage of the superior, types. This must tend to maintain the mental endowment of each of these classes at a certain level, while at the same time the total effect of the arrangement is to increase the output of good brains. The upper middle class, greatly outnumbering as it does the aristocratic, has the best brains in the country, and the mating between its members is therefore a selective mating of superior mental types, and this gives greater opportunity for the breeding of like superior types than would result in the case of a community having no psychic hierarchy. Parents of superior mental endowment are more likely than parents of inferior mental endowment to produce a genius. For this reason I should expect a community with a well developed social hierarchy, and in which individualism is allowed full play, to produce a larger proportion of intellectual giants than one in which there is little social differentiation. As a matter of fact, in such a community as our own the men of outstanding ability are mainly derived from the upper middle classes. They practically never come from the unskilled working-class, and, indeed, comparatively rarely from the "working class" at all—a fact all the more remarkable when we consider how greatly the working class outnumbers the upper middle class. This division of the community into mental grades brings into strong relief the fact that all men are *not* equal.[3]

The existence of a mental hierarchy among civilised peoples must be taken into consideration in any comparison made between them and so-called "savages." Our question must not be "how does the civilised man compare mentally with the savage"? but rather "how (in the case of such a nation as our own) does the upper middle class man, the skilled mechanic, the unskilled workman, the vagrant, respectively, compare with the savage"?

The vagrant I should place on a lower mental plane than the savage.[4] How far the average unskilled workman is mentally superior to the savage is matter for investigation: it may be doubted whether he stands on a much higher mental level. Sharing as he does all the advantages of traditional knowledge, we are perhaps apt to place him too high in the mental scale. We must never forget that all the great discoveries, all the great advances of civilisation, have been initiated by the chosen few, by men of special powers, while all alike have benefited by these advances. The rank and file of the community have, as it were, been pushed along in the course of civilisation by the select few, and have shared in the advantages which these have won.

Mental Capacity may be Potential or Actual.

In estimating the mental capacity of an individual or of a race, distinction must be drawn between the potential and the actual. Every human being is born with a certain measure of psychic potentiality—capacity capable of being awakened into actuality by suitable stimuli, but in the absence of these, remaining for ever dormant.

Suppose it were possible for a person to grow up in some isolated part of the world wholly cut off from his fellows. In such a case only a small fraction of his mental potentiality would ever become actual. Not only would he be without language, it is even doubtful whether he would, of his own accord, construct the rudest implement. His knowledge, owing nothing to tradition, would be but the accumulation of his own limited personal experiences. His actual (as distinguished from his potential) mental level would be little higher than that of the ape. It is essentially by mixing with his fellows that a man's dormant capacities are awakened. He observes and copies his human associates, and by means of language is able to come into intimate mental contact with them, profiting not only by their experiences but by their traditional knowledge. This traditional knowledge, even before man learnt to record his thoughts in writing, was considerable; since he learnt to do so it has undergone an immense, we may almost say an infinite, increase, and its influence in furthering individual mental development is enormous. What would a Shakespeare, a Newton, a Wagner, have done if he had lived and died among primitive savages such as the Australians?

Bearing these facts in mind, we shall be cautious how we estimate the innate mental capacity of a people by their actual mental development, as displayed, e.g., by their culture. It is not safe to conclude that because a race, such as the Australian aborigines, is at a low level of culture it is therefore incapable of a higher; or that because it has no number beyond 5 it is wholly devoid of mathematical ability. As a matter of fact, the children of the aboriginal Australians are nearly, if not quite, as quick at figures as European children. And here let me draw attention to the danger of relying too implicitly on the reports of travellers respecting the mental capacity of primitive peoples. Without living a long time among a people and conversing with them in their own language, it is not possible to get any real knowledge of them. I have seen it recorded, e.g., that the Australians do not believe in a God; yet so far is this from the truth that a missionary who had lived for many years with an Australian tribe and had learnt their language tells me that they had no fewer than 80 gods, the names of whom they were able to recite from memory!

We should be equally cautious in our estimate of the capacity of extinct races. Judged by the crude, chipped stone implements which Palæolithic man has left behind him, we are apt to underrate his capacity, and to assume that he was incapable of doing anything better. Thus Drummond concludes that in Palæolithic times "man was as yet *incapable* of polishing a stone implement." Yet it is now believed that the brain of Palæolithic man was, in size at least, equal to that of the modern European.

While it is admitted on all hands that Palæolithic man existed for tens of thousands of years, the evidence of the stone implements he has left behind him shows that during the whole of this long period he made very slight progress in culture. This is a striking fact, and the lesson to be learnt from it is that, lacking the necessary stimuli, mental capacity may for long ages remain dormant—unrealised. Granting that man has increased somewhat in mental capacity during the period of civilisation, I think we must conclude that the vast advance he has made in the industries and in knowledge generally has been due mainly to the fact that civilisation has provided conditions which have awakened dormant capacity, has, i.e., provided the required stimuli. If anyone is inclined to doubt this conclusion, let him consider the history of mechanical inventions. During the last few generations the output of inventions has exceeded that of man's entire previous career. This has obviously been due, not to any sudden increase in his inventive faculty, but to certain conditions which have tended to call out that faculty. Had James Watt lived in Palæolithic times, where would he have found the kettle to suggest the motor power of steam?

This question of unrealised mental possibilities is one of supreme interest. While it is certain that our primitive ancestors only realised themselves to a very limited extent, it is equally certain that modern man seldom, if ever, realises himself to the full: few are even given the opportunity of self-realisation, and those who are but rarely take

[3] Men differ enormously in intellectual ability and in moral grit. In both these respects the upper middle class is congenitally superior to the unskilled working class, while the difference between the highest and lowest types in the community is such as to make the suggestion that there is any basic equality among mankind little short of ridiculous.

[4] I ought to specify some particular grade of savage, since all savages are not on the same mental plane. The standard I have in my mind is that of the precibicultural Australian.

full advantage of it. The conditions of our civilisation are such that the majority of our social units are held to a narrow routine of activity, which is often uncongenial, if it is not actual drudgery.

Consider, too, how many men and women there are with splendid potentialities which are never realised through their not having been happily mated. The ideal society is one which gives to each of its units the fullest scope for self-realisation. Unfortunately there seems small prospect at present of such an ideal being even approximately attained.

How are we to account for this large fund of dormant mental power, for this apparent redundancy of mental endowment? The explanation probably lies in the fact that intelligent, as distinguished from purely instinctive, action implies educability, and a high order of intelligent action, a correspondingly high educability. While a stereotyped instinct suffices to adapt an organism to a simple stereotyped environment, it is wholly inadequate as an adaptive guide in respect of a complex and continually varying environment—one which is, so to speak, for ever presenting new problems for solution. Such an environment requires a mind which can store up experiences, and which (in the case of a being living under the complex conditions of mankind) can arrive at knowledge by reasoning. All this demands a supreme degree of educability—in other words, a high psychic potentiality.

Biological Evolution.

Biological evolution takes place by the continued selection through successive generations of favourable variations. Natural selection is without question equally essential to evolution, both morphological and mental, whether we suppose it to operate on mutations alone or on these and fluctuations also. Consider the mental evolution of man. It is manifest that there has been a progressive cerebral, and corresponding mental, development in the evolving human in all his stages, from the pre-human ape to the modern man. This has taken place by the sustained selection of those who have varied mentally in an upward direction. We may leave it to the expert to decide whether these favourable mental variations have been of the nature of mutations or fluctuations or both. One thing we may safely conclude, and that is that, considering the infinite complexity of cerebral structure, the evolving man could not have mounted from the ape to the completed man by a few leaps. Anthropological data suggest that it took at least a million years for the anthropoid to develop into homo sapiens, and that this has been effected by the accumulation through natural selection of an infinite number of successive improvements. Whether the selected variations are to be regarded as mutations or fluctuations matters little, so long as it is recognised that without natural selection mental evolution would not have been possible.[5]

In considering the influence of natural selection on mental evolution, it has to be remembered that in the case of the evolving man it has not merely been a struggle against starvation, against other animals, and against the inanimate forces of nature: it has largely been also a ***struggle against the special conditions imposed by the evolving man himself***, and, as we shall see, it has been the stringent selection entailed by these conditions which has brought about man's phenomenal mental ascent.

Natural Selection still Stringently Operative on Man.

A common error, and one into which even leading biologists have fallen, is that natural selection has ceased, or all but ceased, to operate on man. We are continually being told that man has "cast off the yoke of natural selection" as though it were some fearful curse, the strangely ignored fact being that it is by the magic ladder of natural selection that he has climbed to his present pinnacle of excellence, and that without it it would be impossible for him to continue his psychic ascent. Thus Arthur Thomson rejoices in man's happy escape "from under the inexorable sway of natural selection," and comments sympathetically upon his revolt against its action, declaring that we can never again assume "the yoke of natural selection which even early man began to wriggle out of, which man has been more and more effectually throwing off as the ages have passed."[6]

Similarly Professor Ray Lankester asserts that man's mental qualities "have to a very large extent, if not entirely, cut him off from the general operation of that process of natural selection and survival of the fittest which up to their appearance had been the law of the living world"; and in another passage he refers to man as "emancipating himself from the destructive methods of natural selection."

It is true that man's revolt against natural selection has led to the survival of many who would otherwise have perished. But in so far as it has preserved inferior types it can hardly receive the commendation of the eugenist. It is, however, equally true that this vaunted revolt is far less effective than appears at first sight, and that over man, as over all living things, natural selection continues to exert its inexorable and, I would add, beneficent sway, and will continue to do so so long as man exists.

More than 20 years ago, in my work "The Causation of Disease," I pointed out that all deaths from other than purely accidental causes occurring before the termination of reproductive life are, biologically speaking, deaths of the unfit, since they result from an inability to cope with the environment (notably with pathogenic micro-organisms). They are thus instances of natural selection. The number of such deaths is, and always will be, great.

But even this does not put the case strongly enough. It has to be remembered that every individual who leaves no offspring behind him is racially eliminated, and so far as the not leaving of offspring is due to personal peculiarity—such as sterility, desire among the married not to have children, neglect of children by their parents, indifference to marriage, lack of qualities in the woman which lead her to be sought or accepted in marriage—it implies the elimination of certain types.

In countries like our own, in which option is free, marriage is more potent to modify the race than in countries such as France, in which it is the usual custom for the parents to arrange the mating. Thus with us marriage must for a long time have been exerting a definite influence on type. On the whole, the better looking women have presumably been selected. It is certain that definite mental types have been selected, both in the case of the man and the woman, and that this has had a definite racial effect and is a genuine instance of natural selection. Here is a wide field for study.

The custom, now so rapidly extending, of restricting the number of births is having a definite effect upon race. The curtailment being greater among the upper classes than among the lower, the latter are the more prolific, and thus there is taking place a retrogressive selection of inferior mental types.

Ever since the first institution of tribal life, natural selection has been busily eliminating the morally defective. The extent to which this elimination is taking place at the present time is not adequately realised. How many cannot we all recall of those who have fallen out of the ranks? Drunkenness, debauchery, criminality, are laying their lethal hands upon the moral weaklings, and purging the race of them.

(*To be continued.*)

[5] The more I study the question the more is this truth borne in upon me, and the more I am concerned to champion in my humble way the rôle of natural selection in evolution, because, as far as it goes, it is a real *explanation* of evolution. Given hereditary adaptive variations and an increasingly stringent environment, evolution by selection must, as a *logical necessity*, follow. Possibly Karl Pearson would maintain that the necessity here "lies in the world of conception, and not in the world of perception" (see his "Grammar of Science," 1911, Part I, p. 134). This acute thinker rightly insists that science does not *explain*, that it merely *describes sequences* and constructs formulæ which "resume those sequences in conceptual shorthand," and that in the last resort all we can say of any given constant sequences—e.g., day and night, the breaking of a window by the impact of a stone—is just this: that we find from experience that they occur—*why* we cannot tell; that there is no logical necessity in their occurrence (in the sense that two and two make four); that the sequences might, for aught we know, have been other than experience has shown them actually to be. Natural selection is, however, as far as it goes, a real explanation of evolution, not a mere description of sequences.

[6] Bible of Nature, p. 225.

GIFT OF RADIUM TO THE MIDDLESEX HOSPITAL.—Prince Alexander of Teck has received from Sir Charles W. Morrison-Bell a donation of £1000 for the purchase of radium for the Cancer Charity of the Middlesex Hospital.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

MEETING OF COMITIA.

A COMITIA was held on April 24th, Sir THOMAS BARLOW, Bart., K.C.V.O., the President, being in the chair.

The following gentlemen having passed the required examination were admitted as Members of the College:—James Leatham Birley, M.B. Oxon., L.R.C.P.; Joseph le Fleming Coy Burrow, M.B. Edin.; Gordon Ley, F.R.C.S., L.R.C.P.; Gustave Jean Philippe Monod, M.D. Paris; Charles Sheard, M.B. Toronto, L.R.C.P.; and Stanley Wyard, M.D. Lond.

Licences to practise physic were granted to 88 gentlemen who had passed the necessary examinations.

The following Members, nominated by the Council, were elected to the Fellowship:—John Oglethorpe Wakelin Barratt, M.D. Lond. (Liverpool); Edward Stainer, M.D. Oxon.; Henry Russell Andrews, M.D. Lond.; Francis Hugo Thiele, M.D. Lond.; William Philip Sutcliffe Branson, M.D. Cantab.; Walter Henry Maxwell Telling, M.D. Lond. (Leeds); Ernest Edward Glynn, M.D. Cantab. (Liverpool); Thomas Grainger Stewart, M.D. Edin.; John Brian Christopherson, M.D. Cantab. (Khartoum, Egypt); Alexander George Gibson, M.D. Oxon. (Oxford); Frederick Samuel Langmead, M.D. Lond.; Henry Roy Dean, M.D. Oxon. (Sheffield); Thomas Lewis, M.D. Lond.; Maurice Alan Cassidy, M.D. Cantab.; Charles Wilberforce Daniels, M.B. Cantab.; and James Mackenzie, M.D. Edin. Nominated by the Council under By-law LXXI. (*b*), and proposed to the College for election to the Fellowship:—Charles James Martin, M.B. Lond., F.R.S.

The following communications were received:—1. From the Secretary of the Royal College of Surgeons of England, reporting proceedings of the Council of the College on April 10th, 1913. 2. From Miss Ellen L. Wilks, dated March 26th, 1913, asking leave to have a carbon print made of the portrait of the late Sir Samuel Wilks, Bart., which he left to the College. Leave was granted. 3. From Mr. D'Arcy Power, F.R.C.S., dated April 3rd, 1913, asking leave, on behalf of the Section of History of Medicine of the Royal Society of Medicine, to photograph certain portraits of Harvey. Leave was granted.

An alteration was made in the regulation appended to By-law CXVII. whereby candidates for the Membership should be allowed three instead of four hours for each of the written parts of the examination.

Dr. S. J. Sharkey was re-elected the representative of the College upon the Senate of the University of London.

A report was received from Dr. A. E. Garrod concerning the Fourth International Congress on Physio-therapeutics recently held in Berlin.

A report was received and adopted from the Committee of Management, dated March 4th, 1913, recommending that Blundell's School, Tiverton, Elizabeth College, Guernsey, and Watford Grammar School should be added to the list of institutions recognised by the Examining Board in England for instruction in chemistry and physics.

After further formal business the PRESIDENT dissolved the Comitia.

THE SEVENTEENTH INTERNATIONAL CONGRESS OF MEDICINE (1913).

SECTION OF MEDICINE.

THE Medical Section is under the presidency of Sir William Osler, Bart. The secretaries are Dr. John Cowan (Glasgow), Dr. Lovell Gulland (Edinburgh), Dr. A. R. Parsons (Dublin), Dr. A. E. Garrod, Dr. W. Pasteur (acting secretary), Dr. H. D. Rolleston, and Dr. W. Hale White. The meetings of the section will be held at the Royal Society of Medicine, 1, Wimpole-street, W. The work of the section will comprise: (1) discussions; (2) selected papers; (3) a clinical museum; and (4) demonstrations of clinical apparatus, methods, &c.

The following discussions have been arranged:—August 7th: The Clinical Aspects of Hæmolysis. Reporters: Professor G. Banti (Florence) and Professor F. Widal (Paris). 8th: Correlations of the Organs of Internal Secretions and their Disturbances. (Jointly with Section II., Physiology.) Reporters: Professor E. Gley (Paris), Professor Dr. Baron Alex. von Koranyi (Budapest), and Professor Dr. F. Kraus (Berlin). Dr. Bernard, Dr. Carnot, and Dr. Claude (Paris); Dr. Biedl and Dr. Falta (Vienna); Dr. Hedon (Montpelier); Dr. Meltzer (New York); and Dr. Ferrannini (Camerino) have intimated their intention to take part in the discussion. 9th: The Pathology of Heart Failure. Reporters: Professor H. Vaquez (Paris) and Professor Dr. H. F. von Wenckebach (Strasburg). 11th: Diabetes. Reporters: Professor G. Dock (St. Louis, U.S.A.) and Professor Dr. Karl von Noorden (Vienna). 12th: Differentiation of the Diseases included under Chronic Arthritis. Reporters: Professor L. F. Barker (Baltimore, U.S.A.) and Professor Dr. Freidr. von Müller (Munich).

The afternoon sittings will be devoted to the reading and discussion of independent papers. Among many already promised the following may be mentioned:—Treatment of Leukæmia with Benzol (A. von Koranyi). Treatment of Pulmonary Tuberculosis by Artificial Pneumothorax (Ch. Saugman). Insuffisances Pluriglandulaires (H. Claude, Paris). Der Augenblickliche Stand der Diagnosis der Pancreas-Erkrankungen (F. Wohlgemuth, Berlin). Chronic Bacterial Endocarditis, with a series of preparations illustrating the condition from the Pathological Museum, Mount Sinai Hospital, New York (E. Libman). The Recognition of the Status Lymphaticus in Adults (Haven Emerson, New York). Diagnosis and Treatment of Duodenal Ulcer (Max. Einhorn, New York). A Modified Form (?) of Sporadic Typhus, Brill's Disease (Brill, New York).

Demonstrations of clinical cases of special interest will be held in connexion with the morning and afternoon meetings of the section, and a strong committee has been formed to bring together the best available material for this purpose. Facilities will also be given to any member of the section who wishes to demonstrate any new clinical apparatus or clinical method. All applications should be addressed to the acting secretary, Dr. W. Pasteur, 4, Chandos-street, Cavendish-square, W.

The dinner of the Medical Section will be held at the Connaught Rooms, Great Queen-street, W.C., on Friday, August 8th. For information about the dinner members of congress are requested to apply to the secretary of the dinner committee, Mr. George Bethell, 11, Chandos-street, Cavendish-square, W.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, and whose aggregate population at the middle of this year is estimated at 17,852,766 persons, 9013 births and 5052 deaths were registered during the week ended Saturday, April 26th. The annual rate of mortality in these towns, which had been 15·6, 15·2, and 15·8 per 1000 in the three preceding weeks, declined to 14·8 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 15·4, or 0·2 per 1000 below the corresponding rate in London. The death-rates last week in the several towns ranged from 5·0 in Tottenham, 5·2 in Southend-on-Sea, 6·6 in Ilford, 7·2 in Leyton, and 8·6 in Wallasey, to 19·4 in Dewsbury, 19·5 in Bootle, 20·3 in Middlesbrough, 21·9 in West Bromwich and in Stockton-on-Tees, 22·3 in Walsall, and 26·2 in St. Helens.

The 5052 deaths from all causes in the 96 towns were 368 below the number in the previous week, and included 338 which were referred to the principal epidemic diseases, against 394 and 412 in the two preceding weeks. Of these 338 deaths, 141 resulted from measles, 80 from whooping-cough, 56 from infantile diarrhœal diseases, 37 from diphtheria, 14 from scarlet fever, 9 from enteric fever, and 1 from small-pox. The mean annual death-rate from these diseases last week was equal to 1·0 per 1000, against 1·2 in each of the four preceding weeks. The deaths attributed to measles, which had been 215, 213, and 203 in the three preceding weeks, further declined to

141 last week, and caused the highest annual death-rates of 1·6 in Wolverhampton and in St. Helens, 1·7 in Hastings, 2·2 in Walsall, 2·3 in West Bromwich, and 2·6 in Bury. The deaths referred to whooping-cough, which had been 60, 50, and 74 in the three preceding weeks, further rose to 80 last week, and included 26 in London, 9 in Stoke-on-Trent, 4 in Leeds, and 3 each in Birmingham, in Salford, in Gateshead, and in Newcastle-on-Tyne. The fatal cases of diarrhœa and enteritis (among infants under 2 years of age), which had been 53, 63, and 65 in the three preceding weeks, declined to 56 last week; 23 deaths were registered in London and 2 each in Wolverhampton, Leicester, Liverpool, Manchester, Preston, Leeds, and Middlesbrough. The deaths attributed to diphtheria, which had been 35, 36, and 41 in the three preceding weeks, were 37 last week; 6 deaths were recorded in Portsmouth, 4 in London, 4 in Leeds, 3 in Leicester, 2 in Liverpool, 2 in Manchester, and 2 in Bradford. The deaths deaths referred to scarlet fever, which had been 23, 19, and 17 in the three preceding weeks, further fell to 14 last week, of which number 4 occurred in London, 2 in Birmingham, and 2 in Liverpool. The fatal cases of enteric fever, which had been 16, 13, and 12 in the three preceding weeks, further fell to 9 last week, and included 2 in Gateshead. The death from small-pox occurred in Liverpool.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had steadily declined from 2112 to 1334 in the 17 preceding weeks, slightly rose to 1339 at the end of last week; 185 new cases were admitted during the week, against 167, 148, and 215 in the three preceding weeks. These hospitals also contained on Saturday last 824 cases of diphtheria, 695 of measles, 293 of whooping-cough, and 36 of enteric fever, but not one of small-pox. The 1285 deaths from all causes in London were 139 fewer than the number in the previous week, and were equal to an annual death-rate of 14·8 per 1000, coinciding with the rate in the aggregate of the 96 towns. The deaths referred to diseases of the respiratory system, which had been 346, 285, and 329 in the three preceding weeks, fell to 245 last week, but were 22 in excess of the number recorded in the corresponding week of last year. The fatal cases of influenza numbered 32, against 45 and 28 in the two preceding weeks.

Of the 5052 deaths from all causes in the 96 towns, 188 resulted from different forms of violence, and 395 were the subject of coroners' inquests. The causes of 38, or 0·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Leeds, Bristol, Bradford, Hull, Nottingham, and in 57 other smaller towns. Of the 38 uncertified causes of death last week, 7 were registered in Liverpool, 6 in Birmingham, 4 in St. Helens, 3 in Bootle, 3 in Preston, and 2 in South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,259,600 persons at the middle of this year, 1265 births and 768 deaths were registered during the week ended Saturday, April 19th. The annual rate of mortality in these towns, which had been 17·2 in each of the three preceding weeks, rose to 17·7 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these Scotch towns averaged 19·1, against a corresponding rate of 16·9 per 1000 in the 96 large English towns. Among the several towns the death-rates during the week ranged from 9·0 in Kilmarnock, 10·8 in Hamilton, and 13·4 in Clydebank, to 21·4 in Ayr, 21·7 in Dundee, and 26·7 in Perth.

The 768 deaths from all causes were 22 in excess of the number in the previous week, and included 72 which were referred to the principal epidemic diseases, against 75 and 83 in the two preceding weeks. Of these 72 deaths, 39 resulted from whooping-cough, 13 from measles, 9 from infantile diarrhœal diseases, 8 from diphtheria, 2 from enteric fever, and 1 from scarlet fever, but not one from small-pox. These 72 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·7 per 1000, against 1·2 in the 96 large English towns. The deaths attributed to whooping-cough, which had been 44, 43, and 44 in the three preceding weeks, declined to 39, and comprised 23 in Glasgow, 8 in Edinburgh, 3 in Leith, 3 in Greenock, and 2 in Motherwell. The deaths referred to measles, which had been 9, 8, and 13 in the three preceding weeks, were again 13 in the week under notice, and included 8 in Glasgow and 3 in Aberdeen. The fatal cases of diarrhœa and enteritis (among infants under 2 years of age), which had declined from 18 to 11 in the four preceding weeks, further fell to 9, of which number 6 were registered in Glasgow. Of the 8 deaths attributed to diphtheria, which showed but slight variation from recent weekly numbers, 2 occurred in Glasgow and 2 in Dundee. The 2 deaths referred to enteric fever and the fatal case of scarlet fever were recorded in Glasgow.

The deaths referred to diseases of the respiratory system, which had steadily declined from 166 to 117 in the four preceding weeks, rose to 153 in the week under review; 31 deaths were attributed to different forms of violence, against 27 and 31 in the two preceding weeks.

In the 16 largest Scotch towns with an aggregate population estimated at 2,259,600 persons at the middle of this year, 1283 births and 751 deaths were registered during the week ended Saturday, April 26th. The annual rate of mortality in these towns, which had been 17·2, 17·2, and 17·7 per 1000 in the three preceding weeks, declined to 17·3 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these Scotch towns averaged 17·4, against 15·4 per 1000 in the 96 large English towns during the same period. Among the several towns the annual death-rates last week ranged from 7·4 in Perth, 10·8 in Coatbridge and in Hamilton, and 11·0 in Clydebank, to 19·0 in Glasgow, 21·4 in Ayr, and 23·8 in Paisley.

The 751 deaths from all causes were 17 below the number in the previous week, and included 76 which were referred to the principal epidemic diseases, against 83 and 72 in the two preceding weeks. Of these 76 deaths, 34 resulted from whooping-cough, 18 from measles, 16 from infantile diarrhœal diseases, 3 from scarlet fever, 3 from diphtheria, and 2 from enteric fever, but not one from small-pox. These 76 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·8, against 1·0 per 1000 in the 96 large English towns. The deaths attributed to whooping-cough, which had been 43, 44, and 39 in the three preceding weeks, declined to 34 last week, and included 18 in Glasgow, 3 in Edinburgh, 3 in Paisley, 3 in Motherwell, and 2 in Greenock. The deaths referred to measles, which had been 8, 13, and 13 in the three preceding weeks, further rose to 18 last week, and comprised 9 in Aberdeen, 8 in Glasgow, and 1 in Falkirk. The fatal cases of diarrhœa and enteritis (among infants under 2 years of age), which had declined from 18 to 9 in the five preceding weeks, rose to 16 last week, of which number 9 were recorded in Glasgow and 3 in Dundee. Of the 3 deaths attributed to scarlet fever, which showed but slight variation from recent weekly numbers, 2 occurred in Glasgow and 1 in Dundee. The deaths referred to diphtheria, which had been 6, 9, and 8 in the three preceding weeks, declined to 3 last week, and comprised 2 in Glasgow and 1 in Kirkcaldy. The 2 fatal cases of enteric fever were recorded in Glasgow and Dundee respectively.

The deaths referred to diseases of the respiratory system, which had been 127, 117, and 153 in the three preceding weeks, declined to 119 in the week under notice; 34 deaths resulted from various forms of violence, against 31 in each of the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,199,180 persons at the middle of this year, 673 births and 491 deaths were registered during the week ended Saturday, April 26th. The annual rate of mortality in these towns, which had been 23·3, 22·5, and 20·9 per 1000 in the three preceding weeks, rose to 21·3 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these Irish towns averaged 22·0 per 1000; in the 96 large English towns the corresponding rate did not exceed 15·4, while in the 16 Scotch towns it was equal to 17·4 per 1000. The annual death-rate last week was equal to 24·5 in Dublin (against 14·8 in London and 19·0 in Glasgow), 20·4 in Belfast, 23·8 in Cork, 17·8 in Londonderry, 16·2 in

Limerick, and 17·1 in Waterford, while in the remaining 21 smaller towns the mean death-rate did not exceed 18·5 per 1000.

The 491 deaths from all causes in the 27 Irish towns were 10 in excess of the number in the previous week, and included 24 which were referred to the principal epidemic diseases, against 37 and 42 in the two preceding weeks. Of these 24 deaths, 7 resulted from infantile diarrhœal diseases, 6 from whooping-cough, 5 from measles, 3 from scarlet fever, 2 from diphtheria, and one from enteric fever, but not one from small-pox. These 24 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·0 per 1000, which coincided with the rate from these diseases in the 96 large English towns, while the corresponding rate in the 16 Scotch towns last week rose to 1·8 per 1000. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 11, 10, and 10 in the three preceding weeks, declined to 7 last week, of which number 5 were recorded in Dublin. The deaths referred to whooping-cough, which had been 5, 3, and 6 in the three preceding weeks, were again 6 last week, and comprised 2 each in Dublin, in Belfast, and in Waterford. The fatal cases of measles, which had been 14, 14, and 18 in the three preceding weeks, declined to 5 last week, of which number 3 were recorded in Wexford. The 3 deaths attributed to scarlet fever, 2 of which occurred in Belfast and 1 in Dublin, were equal to the average in the four preceding weeks. The 2 fatal cases of diphtheria were registered in Dublin and Belfast respectively, and that of enteric fever in Kilkenny.

The deaths referred to diseases of the respiratory system, which had been 142, 109, and 92 in the three preceding weeks, slightly rose to 97 in the week under notice. Of the 491 deaths from all causes, 151, or 31 per cent., occurred in public institutions, and 11 resulted from different forms of violence. The causes of 26, or 5·3 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death last week was 0·8 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeons: J. E. H. Phillips to the *Superb*, on recommissioning; and S. T. Reid to the *Goliath*, on becoming parent ship. Staff-Surgeon: R. S. Osborne to the *Hermes*, on commissioning. Surgeons: W. W. D. Chilcott to the *Superb*, on recommissioning; and A. S. Paterson to the *Goliath*, on becoming parent ship.

ROYAL ARMY MEDICAL CORPS.

Captain Daniel L. Harding to be Major (dated April 26th, 1913).

Colonel R. Kirkpatrick, C.M.G., has taken up duty as Assistant Director of Medical Services to the Abbottabad and Sialkot Brigades of the Second (Rawal Pindi) Division.

Lieutenant-Colonel H. J. Fletcher has been transferred from Sialkot to Rawal Pindi Cantonment. Lieutenant-Colonel S. Hickson has been selected for appointment as Honorary Surgeon to His Majesty the King. Lieutenant-Colonel J. Thomson has arrived home from Harrismith, tour expired. Lieutenant-Colonel D. M. O'Callaghan has taken over charge of the Military Hospital at Hilsea. Lieutenant-Colonel G. D. Hunter, D.S.O., has been placed under orders for service abroad. Lieutenant-Colonel F. R. Newland has been appointed Senior Medical Officer of the South-Eastern Coast Defences. Lieutenant-Colonel H. M. Sloggett has arrived home for duty from Malta. Lieutenant-Colonel T. B. Winter has taken up duty *pro tem.* as Officiating Assistant Director of Medical Services to the Colchester District. Lieutenant-Colonel G. H. Barefoot has been appointed to the London District. Lieutenant-Colonel W. C. Beevor, C.M.G., has been appointed to hold charge of the King George V. Military Hospital at Arbor Hill, Dublin.

Major N. J. C. Rutherford has arrived home for duty from South Africa. Major T. E. Fielding has been transferred from the London District to the Southern Command. Major H. A. Hinge has been appointed in charge of the Surgical Division of the Cambridge Hospital at Aldershot. Major H. E. Staddon has embarked for a tour of duty in India. Major D. Lawson holds himself in readiness for service abroad. Major N. Faichnie has been transferred from Delhi Cantonment to Meerut. Major B. B. Burke has arrived home from the Sierra Leone Protectorate. Major E. W. Siberry has been appointed Recruiting Medical Officer in the London Recruiting Area. Major J. P. Silver has been appointed Medical Officer at Fort Camden, Queenstown Harbour. Major J. P. J. Murphy has been transferred from Cape Town to Potchefstroom. Major J. D. Alexander has been appointed to officiate in Command of the Military Hospital at Ranikhet Cantonment. Major J. B. Anderson has taken up duty as Embarkation Medical Officer at Southampton. Major Fitz G. G. Fitzgerald has been appointed to hold medical charge of the Duke of York's Royal Military School at Dover. Major F. Harvey has been appointed to hold charge of the Military Hospital at Leeds. Major R. S. H. Fuhr, D.S.O., has been selected for duty at the Royal Arsenal, Woolwich. Major E. T. Inkson, V.C., has been transferred from the Military Hospital at Bangalore to Wellington Cantonment. Major F. M. Mangin has embarked for service in India. Major E. B. Steele has been transferred from the London District to Exeter. Major W. J. Taylor has taken over charge of the Military Hospital at Tower Hill, Sierra Leone Protectorate. Major C. J. O'Gorman has been granted six months' leave of absence home from Calcutta on medical certificate. Major J. Poe has been appointed to the Eastern Command. Major C. H. Furnivall has taken up duty at the Military Hospital, Karachi, on transfer from the Fourth (Quetta) Division. Major W. L. Bennett, on return home from a tour of service at Bermuda, has been appointed to Pontefract. Major A. H. McN. Mitchell has been transferred from the Royal Victoria Hospital at Netley to Dover. Major S. F. St. D. Green has been appointed in charge of the Families Hospital and Specialist in Midwifery and Diseases of Women and Children at Quetta. Major D. J. Collins has taken up duty as Specialist in Ophthalmology to the Ninth (Secunderabad) Division of the Southern Army in India. Major E. W. Bliss has been appointed Specialist in Operative Surgery to the Fourth (Quetta) Division.

Captain A. M. Bennett has been appointed Staff-Surgeon at Mhow. Captain E. J. Kavanagh has taken up duty in the Eastern Command. Captain J. James has arrived home from South Africa. Captain V. C. Honeybourne has been appointed to the Irish Command. Captain D. P. Watson has been appointed Clinical Pathologist at the Queen Alexandra Military Hospital. Captain J. A. W. Webster has been placed under orders for service abroad. Captain D. S. Bulst has taken up duty with the Egyptian Army. Captain H. B. Connell has arrived home for duty from the Sierra Leone Protectorate. Captain J. James has been appointed to the Eastern Command. Captain A. G. Wells has taken up duty as Specialist in Operative Surgery to the Lahore Division. Captain B. Johnson has been granted six months' leave of absence from India. Captain P. A. Lloyd-Jones has been transferred to the Aldershot Command. Captain A. S. Williams has been appointed to the Irish Command. Captain J. H. Gurley has taken up duty at the Royal Victoria Hospital at Netley. Captain A. Dawson has arrived home for duty from India. Captain A. C. Vidal has been appointed to the Aldershot Command. Captain E. W. M. Paine has arrived home for duty from Calicut. Captain H. P. Hart has been appointed to Wellington Cantonment. Captain C. Kelly has taken up duty at Woolwich. Captain A. W. A. Irwin has been placed under orders for duty in the Cork District. Captain G. F. Dawson has taken up duty as Specialist in Electrical Science and Radiography to the Meerut Division. Captain A. M. Pollard has arrived home from South Africa. Captain F. D. G. Howell has arrived home for duty from Lahore. Captain R. F. O'T. Dickinson has been transferred from the Military Hospital at Delhi Cantonment to Bareilly. Captain A. H. Bond has taken up duty at Limerick, on transfer from Queenstown. Captain T. W. O. Sexton has arrived home for duty from Wynberg. Captain A. S. Littlejohns has taken up duty in the Dublin District on expiration of leave of absence. Captain A. H. Jacob has joined at Dublin, on transfer from the Curragh Camp. Captain G. H. Stevenson has arrived home for duty from Ambala Cantonment.

INDIAN MEDICAL SERVICE.

Colonel P. Hehir has been granted six months' leave of absence home from India.

Lieutenant-Colonel S. Browning Smith has been selected to officiate as Sanitary Commissioner in the Punjab, in succession to Lieutenant-Colonel E. Wilkinson, granted leave of absence. Lieutenant-Colonel W. E. Jennings has been appointed a Member of the Bombay Council, in succession to Lieutenant-Colonel L. F. Childe, resigned. Lieutenant-Colonel J. J. Pratt has been appointed Lecturer on Tropical Diseases at the Westminster Hospital. Lieutenant-Colonel C. Duer has been granted an extension of leave of absence home from India for six months. Lieutenant-Colonel B. H. Deare has taken up duty as Principal and Professor of Medicine at the Government Medical College, Calcutta, during the absence on leave of Lieutenant-Colonel J. T. Calvert. Lieutenant-Colonel A. Colman has been appointed to Rawal Pindi as Civil Surgeon. Lieutenant-Colonel L. F. Childe has arrived home on leave of absence from India.

Major A. G. McKendrick has been granted two years' leave of absence home from India. Major McCarrison has been placed on special duty under the Director-General. Major W. Selby, D.S.O., has been appointed Professor of Surgery on the staff of King George's Medical College at Lucknow. Major T. Hunter has been granted nine and a half months' leave of absence home from India. Major D. McCay has been appointed Professor of Materia Medica at the Government Medical College, Calcutta, and Second Physician to the College Hospital, in succession to Lieutenant-Colonel B. H. Deare. Major S. R. Godkin has been appointed Specialist in Operative Surgery to the Ninth (Secunderabad) Division of the Southern Army. Major A. B. Fry has been granted seven months' leave of absence home from India.

Captain J. W. S. Babington has been selected for appointment as Specialist in Ophthalmology. Captain R. S. Kennedy has been appointed Medical Officer to the North-Eastern Frontier Military Police. Captain A. C. Munro has been appointed to the Substantive Medical Charge of the 128th Regiment of Pioneers, in succession to Captain W. J. Fraser. Captain W. L. Forsyth has joined the Madras Jail Department for a course of training.

TERRITORIAL FORCE.

Royal Army Medical Corps.

6th London Field Ambulance, Royal Army Medical Corps: Major (Honorary Major in the Army) William M. O'Connor to be Lieutenant-Colonel (dated March 31st, 1913).

COLONEL SEELY AND THE HEALTH OF THE SOLDIER.

Colonel Seely, who attended a meeting at the Royal Army Medical College, Grosvenor-road, London, S.W., on April 29th, when the prizes were distributed to the successful students for the special course last session, paid a well-deserved tribute to the work of the Army Medical Service. The good results were due in a great measure, he said, to coöperation of the ablest minds in the civilian medical profession, who had worked for the common good of the army and ofthe Empire. There had been a rapid and continuous improvement in the health of the soldiers, and the change since the South African war had been astonishing. The army was now a place where disease was comparatively rare. A higher standard of physical strength in the British soldier had been attained, enabling him to withstand disease in peace and war. Physical training of the young should receive more attention than was at present bestowed upon it.

MEDICAL SICKNESS AND ACCIDENT SOCIETY.—The usual monthly meeting of the executive committee of this society was held at 429, Strand, London, W.C., on April 18th, Dr. F. J. Allan in the chair. The claim account for the quarter ending March 31st was presented and showed that the epidemic of influenza had been as prevalent among the medical profession as among the general public. The new business during that period was well up to the average, and the appeal made by the chairman at the annual meeting to members to make the advantages of the society known to their colleagues had already stimulated inquiries. Information can be obtained from the secretary, Mr. B. Sutton, 33, Chancery-lane, W.C.

Correspondence.

"Audi alteram partem."

THE ROYAL MEDICAL FOUNDATION OF EPSOM COLLEGE AND THE ROYAL MEDICAL BENEVOLENT FUND.

To the Editor of THE LANCET.

SIR,—The good work which is being carried out by the Royal Medical Benevolent Fund is deserving of generous recognition, and I trust that the leading article in your issue of April 26th, setting forth the claims of that fund, will bear fruit with the profession and the public. But as treasurer of the Royal Medical Foundation of Epsom College I feel it to be my duty to draw attention to one statement in that otherwise excellent article which is open to misconstruction and may give rise to the impression that the Royal Medical Benevolent Fund is the only organised agency for rendering assistance to the necessitous members of the medical profession.

The statement to which I refer is the following: "What we want to bring home to our readers, and through them to the public, is that in many cases a medical man through no fault of his own, and his dependents certainly through no fault of theirs, fall into absolute penury, in which plight *nothing may stand between them and hopeless misery but such grants as the Royal Medical Benevolent Fund can make or that private benevolence may supply.*" (The italics are mine.)

You, Sir, will recall the fact that the Epsom College Foundation gives annuities of £30 each to 50 aged members, or widows of members, of the medical profession, and provides a first-class education, together with clothing and maintenance, for 50 necessitous sons of medical men. A sum of close upon £4500 has to be collected annually in donations and subscriptions to meet these deserving and urgent objects. It is for fear that these contributions should decrease that I would ask you to permit me to remind your readers of the necessity for them.

In the article mentioned above you refer to the summaries that are published in THE LANCET from month to month with reference to the cases which the committee of the fund is able to relieve; but the pensions and foundation scholarships provided by the College, as well as a large number of pensions which are paid out of special endowments, are awarded without any notification in the medical press beyond the official announcement issued after the annual general meeting.—I am, Sir, yours faithfully,

HENRY MORRIS, Honorary Treasurer.

8, Cavendish-square, W., April 28th, 1913.

WHEN TO OPERATE IN APPENDICITIS.

To the Editor of THE LANCET.

SIR,—The energetic and forceful contributions by Mr. Edmund Owen to the columns of THE LANCET on appendicitis and its treatment by immediate operation should do much to impress the advisability of this procedure on hesitating members of the profession. He has placed facts before us with remarkable and characteristic lucidity; few will try to controvert them. It is unnecessary to recapitulate the circumstances which gave rise to the discussion at the Medical Society of London on this treatment. Now that the main contention has been permitted to exert its full influence, it may be well to put forward some points which are not without their interest and importance when this subject is under consideration. If this is not done it may be thought that Mr. Owen has made a new discovery—that we are far behind the age as regards the treatment of this disease and have learnt little from the wealth of material which has passed through our hands during the last few years. The advisability of early operation was long ago demonstrated by American surgeons and recognised in this country by those brought most frequently into contact with this disease. It is true that, for a time, operation in the quiet period was put forward as the safe treatment, but increasing experience showed that, although operation was safe then, it was much better to get rid of the diseased appendix before it had had power to do much harm.

More than one surgeon in this country has advocated early operation, probably the most convincing of the contributions being a paper by Mr. C. A. Ballance (1905), who brought forward statistics from many sources, including some of the principal continental clinics. Early removal has also been urged in "Diseases of the Vermiform Appendix and their Complications,"[1] whilst in 1911 I read a paper before the Wimbledon Medical Society on the same subject.[2] It is the only plan of treatment in a majority of the cases, for we cannot expect everyone to possess the knowledge which will enable him to differentiate the more dangerous types from those which will run a mild course and subside without surgical interference. Those who do not operate frequently, still less those who never see an operation, cannot form an opinion as to the morbid processes in the appendix which led to the symptoms and local signs present in the case. These men are in the position which we all occupied some years ago before the disease became so common. They recognise that the patient has appendicitis, and that is all that concerns them.

Most surgeons have for years, I venture to say, examined the appendix thoroughly after removal, and made a note of the result of this examination after the diseased structure has been opened up. To say that an appendix is gangrenous, or that it has perforated, is not enough; we want to know what causes the gangrene so frequently found in acute attacks, for it may depend on many things. To publish a series of cases of the early and successful removal of so many scores of acutely diseased appendices does not do more at the stage at which we have arrived regarding appendicitis than confirm our statement that early removal is the most satisfactory treatment. The larger the number of the cases and the better the results, the more satisfied are we that this is the right thing; but to say that the lives of all of them would have been lost had this method not been employed is incorrect, and surely to tell many patients that they will die unless they submit to immediate operation is wrong. It has frequently been proved to be so. Furthermore, I would add that an attempt to recommend operation indiscriminately without any endeavour to differentiate between the varieties and potentialities of the morbid processes causing the acute attack does not lead to the advancement of our clinical knowledge or to the credit of the profession. Time after time a case is seen in which the question arises, Must operation be done at once? for there are many reasons why it should be postponed unless it is imperative.

There never was a time when the general practitioner was so well educated or so well fitted to deal with abdominal emergencies. It is even possible that he may sometimes be too eager to exercise his skill. There is a growing reluctance to call in a doctor who always operates at once, because the idea prevails that if the patient has a stomach-ache, whether due to indigestion, constipation, influenza, or other common cause, the doctor will want to open the patient up. This is a great pity, because it leads to loss of valuable time in really grave attacks, for the friends wait to see if the child will not improve.

Contrary to the opinion of Mr. Owen, I believe that many practitioners can give quite correct opinions as to the course of a particular attack, whilst surgical consultants can speak with considerable accuracy as to the nature of the process which has commenced in the appendix. We have had much experience during the past 20 years derived from constant observation and practice, whilst those in general work have been better instructed in the varying phases of the disease. Far more of the urgent cases are sent to the hospitals within the first 24 hours of illness than was formerly the case, the appreciation of the clinical condition is made earlier, and the operation is done as soon as possible in most institutions. In spite of this the supply of patients applying for operation in the quiet interval shows little diminution. Appendicitis is a septic disease, and will always be dangerous to the individual affected because of the nature of the membrane by which the organ is surrounded and the position which it occupies. There are also many types according to the primary cause of the attack, its extent, the history of previous attacks, the age, sex, and power of resistance of the individual.

Experience will give the skill to say what is going on in the appendix, and long and constant observation has already given it to many. It is essentially a practical knowledge and cannot be gained simply by reading symptoms in a book. Those who have it are justified in permitting a departure from what should be the recognised rule of treatment—early removal of an appendix which is giving signs of disease.

A consideration of some of the side issues raised by the discussion at the Medical Society and by the correspondence in THE LANCET cannot be satisfactorily undertaken in any journal, however generous the editor might be in affording the hospitality of its columns.

I am, Sir, yours faithfully,

London April 25th, 1913. WILLIAM H. BATTLE.

[1] Fattle and Corner: Constable and Co.
[2] Clinical Journal, January, 1912.

INSANITY AND DIVORCE.

To the Editor of THE LANCET.

SIR,—It is immaterial what the exact wording of the recommendations of the Royal Commissioners on Divorce may be; what I object to is the principle, as stated by "E. A. A.," that "incurable (?) insanity should form a ground for divorce after five years' confinement," even when safeguarded by the opinion of two experts. There are a large number of cases on record in which recovery has taken place after five or more years' detention in an asylum, who were at the expiry of the proposed term apparently incurable. Expert evidence is not always infallible, and, to say the least of it, is at times contradictory.

I admit that cases occasionally arise in which curable or incurable insanity may be a great hardship, but in my experience these have almost invariably been cases in which previous attacks of insanity have been wilfully concealed. This, I think, is a perfectly legitimate ground for divorce. "E. A. A." has not, however, criticised my chief objection to the Royal Commissioners' report—viz., "Why should insanity be pilloried as a ground for divorce more than any other form of incurable illness, which is not directly due to evil living." I am, Sir, yours faithfully,

J. BATTY TUKE, jnr., M.D.

New Saughton Hall, Polton, April 26th, 1913.

INTRACRANIAL COMPLICATIONS OF MIDDLE-EAR DISEASE.

To the Editor of THE LANCET.

SIR,—I have read with very great interest the article by Mr. Hunter F. Tod, in THE LANCET of April 19th, on Extradural Abscess at the Apex of the Petrous Bone.

Let me say at once, I am not an aurist and lay no claim to knowledge on that subject except in so far as relates to intracranial disease. Without criticism, and in an inquiring spirit simply, I wish to ask Mr. Tod if, in his experience, the commencing statement he writes is undeniable—viz., "An extradural abscess is the most frequent complication of acute inflammation of the mastoid process, being due to direct extension of the infective process through the bone to the outer surface of the dura mater, and is almost invariably found in the region of the tegmen tympani or of the lateral sinus, the latter being most frequent." Being a disciple of Macewen, with a knowledge of his masterly work on the "Pyogenic Infective Diseases of the Brain and Spinal Cord," for some years a humble co-worker with him and (I hope) an interested observer of all surgical brain cases, I am naturally influenced by such causes, and wish to state simply and briefly my experience of intracranial suppuration and an easy way of grouping complications. Geometrically considered there are six simple directions in which infective spread may occur from the middle ear—namely, (1) backwards, (2) forwards, (3) upwards, (4) downwards, (5) outwards, and (6) inwards.

1. Backward spread is the most important, leading to infection, *viâ* the iter, of the mastoid antrum, followed by rapid sepsis of the communicating cancellated bone and the horizontal and vertical mastoid cells. The mastoid bone is made up of spongy tissue, and its infections are really in the nature of osteomyelitis. Further backward spread involves, first, the space around the sigmoid portion of the lateral sinus; next the sinus itself (infective sinus thrombosis); then the membranes, causing extradural abscess or meningitis; or, lastly, the meninges in relation to the cerebellum under the

tentorium may rapidly become "soldered" by inflammation (Macewen) conveying the sepsis through it directly to the cortex, resulting in cerebellar abscess.

2. Forward spread means repeated attacks of sore-throat from pus travelling down the Eustachian tube, or in rarer cases infection of the temporo-maxillary articulation.

3. Upward spread through the tegmen tympani or tegmen antri results nearly always in "soldering" of the membranes which are closely in contact with the bone by the temporo-sphenoidal lobe of the cerebrum lying over and pressing on it, and thus almost direct extension into the brain with temporo-sphenoidal abscess results. There is here technically an extra- and intra-dural inflammation, but practically an abscess of the brain. Meningitis with pus formation from this mode of spread is thus extremely uncommon.

4. Downward spread of the infection, involving the vertical cells of the mastoid, in cases where a foramen exists on the deep side of the process, results in Bezold's mastoiditis or suppuration in the posterior triangle of the neck, the pus following the origin of the posterior belly of the digastric muscle.

5. Outward extension is by far the least serious, resulting in a so-called "periostitis" under the temporal fascia, with characteristic downward and forward displacement of the auricle. This form of disease is especially common in children in whom the petro-squamosal suture is open, and accounts for the lesser seriousness of mastoiditis, this suture at times opening directly into the antrum and exercising a safety-valve effect on pus formation.

6. Lastly, inward extension is characteristic. Here the facial nerve may be pressed on or ulcerated, the middle ear may be destroyed, or the internal auditory meatus involved. In the latter case the brain itself is not first reached, but sepsis implicates the glove-like sheath of membranes containing cerebro-spinal fluid, nerves and vessels, and spreads in the subarachnoid space; thus typical acute lepto-meningitis will follow, and not brain abscess.

My interest in Mr. Tod's case leads me to hope that he may set down his views on this important subject.

I am, Sir, yours faithfully,

SPENCER MORT, M.B., Ch.B. Glasg.

Edmonton Infirmary, April 23rd, 1913.

IODOFORM INJECTIONS IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of April 12th there is a letter by Dr. E. Curtin, of Bournemouth, giving his experience of the value of intravenous injections of iodoform in pulmonary tuberculosis. Dr. J. Bain, of South Shields, and Dr. Mervyn Crofton, of University College, Dublin, have, in the *Glasgow Medical Journal*, 1909, and the *British Medical Journal*, 1912, recorded similar experiences. I shall be very much indebted to any readers of THE LANCET if they will kindly furnish me with references to other publications, or personal experiences of the method, with details of the cases in which iodoform failed and in which it succeeded.

I am, Sir, yours faithfully,

THOMAS W. DEWAR.

Kincairn, Dunblane, N.B., April 26th, 1913.

*** The subject of iodoform injections in pulmonary tuberculosis was discussed at a recent meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, reported on p. 1244 of our present issue.—ED. L.

THE MILWARD FUND.

To the Editor of THE LANCET.

SIR,—May we venture to draw the attention of your readers to the above fund? William Courtenay Milward died quite suddenly at Cardiff on April 9th, aged 41. Practically no one knew that he was ill. He has left a widow and three young boys, and they are almost without means.

For the last year and more Milward, as the senior secretary of the Cardiff division of the British Medical Association, and in other capacities, has worked enormously hard for the local profession, and undoubtedly this extra work helped to bring about his death. The fund will be administered as a trust for the benefit of the dependents. It is already nearly £500, besides a number of promises of so much a year for five years. This has almost all been obtained locally. It is possible that there may be some in a wider professional circle who would like to contribute—some who knew Milward, others who sympathise with the circumstances of his death. Hence this letter. Any further particulars may be obtained from, and contributions will be gratefully received by, us. We are, Sir, yours faithfully,

WILLIAM SHEEN,
2, St. Andrew's-crescent, Cardiff (honorary treasurer).
A. L. THORNLEY,
18, Windsor-place, Cardiff (honorary secretary).

April 29th, 1913.

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—The following note may be of interest to your readers as throwing a sidelight on the working of the National Insurance Act in this district. I may first mention that the nearest town to this village is eight miles distant, and that I am not on a panel.

Towards the end of November last a patient of mine in the village—an insured person and the secretary of an Approved Society—sustained a transverse fracture of the patella. When Jan. 15th approached he decided to wait, at any rate until I was finished with his case, before sending in his name for acceptance by a panel doctor in the nearest town. At the beginning of February I told him I would require, about the end of the month, a Middlesex splint for his use for some months.

The question naturally arose as to whether he was to provide the splint, at a cost to himself of 45*s.* to 65*s.*, or ask to have it granted by the Insurance Committee in virtue of the fact that he was entitled to it in terms of the Act. I advised him to write to the Insurance Committee stating the whole circumstances of the case, with particular reference to the date of the accident. Back came a reply to the effect that the Commissioners for Scotland had been consulted and that they had refused to sanction the provision of this very necessary appliance unless it was ordered by a panel doctor.

I am, Sir, yours faithfully,

JOHN J. ROBERTSON, M.B.

Portpatrick, Wigtownshire, April 29th, 1913.

THE POSITION OF ASSISTANT MEDICAL OFFICERS IN ASYLUMS.

To the Editor of THE LANCET.

SIR,—Anything written by Dr. Robert Jones on asylums must command every attention and respect. Everybody who knows anything about these institutions is aware of the position he occupies and the great authority with which he speaks. While not denying the successes attained by men working under such an eminent psychiatrist, might I respectfully point out that the promotions in asylum work achieved by his assistants and those of his distinguished *confrère*, naturally leave rather little for those outside their charmed circle. To return, however, to my original contention about the suitability of asylum experience as a preparation for general practice, Dr. Jones gives a list of 12 operations altogether performed in his asylum in 12 months. He has six assistants. If they did them all it would be two apiece. Surely they would on this count have better opportunities in institutions entirely reserved for the physically ill. As regards studying for the M.D. and F.R.C.S., might I ask what then becomes of the study of psychiatry? It would be a great testimonial to any assistant to base his knowledge of psychiatry on the knowledge required for these qualifications, but if he goes into the service to get leisure to read for them, and rushes out of it again when he gets them, what can any reasonable man conjecture? Under the stimulus of specialists like Dr. Jones men may do many things, but even in spite of his great inspiration it must be a work of much difficulty, withdrawn as they are from the general hospitals and schools. Would it not be better to face the fact that asylum work is special work in itself, requiring a very special temperament and training, and make a service of it

that the average man could go into feeling he would get reasonable advancement for his work and increasing knowledge of his specialty, and not spend his time trifling with allied subjects or games until chance or other circumstances, often remote from his ability, get him on.

I am, Sir, yours faithfully,

April 28th, 1913. REFORM.

MEDICAL PRACTICE UNDER THE INSURANCE ACT.

(BY OUR SPECIAL COMMISSIONER.)

(*Continued from p. 1203.*)

VIII.—THE SCOTTISH MINERS AND THE ACT.

Bothwell as a Mining Centre.

BOTHWELL is close to Glasgow, and is the centre of the neighbouring mining industries. It is in the county of Lanark where there are many coal-pits, so this is a good place to ascertain how the Insurance Act is affecting the miners and their medical attendants. Before the Act every adult miner, whether married or single, paid 6*d.* per fortnight, or 13*s.* a year, for medical attendance and medicine for himself and his family. Their medical attendants were known as the colliery and public works surgeons—a somewhat misleading title, because they are not attached to public works but to pits and various other works belonging to private companies and owners. It was these owners who appointed the "works doctor," as he is colloquially called. Thus a pit employing, for instance, 600 adult miners, from whose wages 13*s.* per head was deducted annually for medical attendance, meant a medical living, if I may use the clerical term, of £390 a year.

Practice and Patronage.

From the point of view of the progress of science, was it a good thing that colliery owners or managers of great works should have the power of thus conferring livings, some fat, some lean, on members of the medical profession? Were those who exercised this very important patronage competent judges? A good many persons thought that here we had a very serious abuse, and now the National Insurance Act has swept it all away. To-day no such patronage is possible. The practitioner who was the special favourite of the factory or mine owner must put his name on the panel, take his chance with all the other practitioners, and if he has many patients it is because he is popular among the workers, among those who are to be his patients rather than among their employers. This in itself is quite a revolution. One among those who must have been a loser under the new *régime* nevertheless remarked to me that the change was not altogether a bad thing, though the sufferers naturally did not like it.

Every practitioner in Lanarkshire is on the panel, and the works doctors, who previously had a secure income, dependent, of course, upon patronage, now hardly know how they stand. Formerly, and wherever he might live, the miner had to go to the practitioner attached to his pit. As the miners were not all able to get house accommodation close to the colliery where they worked, the works doctor to attend them was often obliged to travel over considerable distances. Now that there is free choice of medical attendant many of the insured persons have left their former works doctor and put their names on the list of a panel doctor who lives nearer at hand. Thus, works doctors have lost many old patients, but some have gained many new ones.

The Attitude of the Insured Patients towards their Medical Advisers.

So far as the relations between the practitioners and their patients are concerned there is no difference in the behaviour of former club patients and the care they expect to receive. There is, however, a great difference when dealing with the newly insured. Thus, one of the leading local practitioners declared to me that he had seen more domestic servants since the Act came into force than during the last five years. Then he had any number of railway servants, stonemasons, carpenters, and skilled artisans generally, who came to him now as insured persons, while formerly they used to consult him, less frequently it is true, but they all paid fees. There were few Friendly Societies in the neighbourhood of Bothwell, and many of those who belonged, for instance, to the Oddfellows, were miners. Consequently, they were entitled to the care of their works doctor. If they also paid for medical aid through their Friendly Society they might have the choice of two medical attendants, for they paid for both. Altogether, and in their dealings with the adult male population, who for the most part are miners, not only have medical men no general cause of complaint, but it seems that, if taken as a whole, the position of the colliery surgeons has improved, though individuals here and there may undergo some loss.

The Medical Contract with the Miners' Federation.

The medical practitioners at Bothwell and for many miles round have, however, other anxieties. The population does not consist only of insured persons. The old scheme of insurance, such as it was, secured medical attendance for the families, and these are entirely neglected by the Insurance Act. In providing for these dependents the medical practitioners have to deal with the Miners' Federation of Scotland, which is a branch of the Miners' Federation of Great Britain, and this, in its turn, is a branch of the International Federation of Miners, which has many thousands, perhaps some millions, of members, and sends direct representatives to the House of Commons and the principal Parliaments of Europe. Facing such an organisation, with its expert leaders and committee men, its delegates well trained in the art of negotiating on behalf of large bodies of men, the members of the medical profession, who have had so little experience in organisation and collective action, find themselves at a great disadvantage. The Miners' Federation, needless to say, have not lost a moment in taking action in view of the Insurance Act. There was an Association of Public Works Surgeons with whom the Miners' Federation could negotiate. The Public Works Surgeons' committee for Scotland and the Miners' Federation met on several occasions during January and February, and finally signed an agreement, which, however, is terminable on either side after a month's notice. The terms then accepted were a flat rate to be paid by all adult males, whether married or unmarried, this to be deducted from their wages by their employers. The amount is 2*d.* per week, and for this medical attendance and medicine are to be given to the wives and children—in fact, the non-insured dependents. If the medical practitioner provides the medicine he is to receive the 2*d.*, or 8*s.* 8*d.* per annum. If not, a $\frac{1}{2}d.$ would go to the dispensing chemist. No part of the 2*d.* is to be deducted for working expenses or management, and in this agreement the miners were careful not to allow a privileged set of works doctors to be brought back into existence. On the contrary, they enforced what the Act had given in regard to insured persons by insisting that there should also "be free choice of doctor for the wives and families, subject to the consent of the doctor to act." This agreement has been signed not only on behalf of the miners of Lanarkshire but several other Scotch counties.

Formation of a Fighting Medical Union.

It was quite obvious, from the various conversations I have had on the spot, that a good many medical men feel not a little humiliated by the obviously inferior position they hold when face to face with the great trade unions of this country, and especially the Miners' Federation. The medical profession has no direct representatives in the House of Commons, it has no discipline, and it has no strike fund to back a fight when a fight is necessary. "What we must have," said one of the leaders of the profession in Lanarkshire, "is a medical union organised on absolutely the same lines as a working man's trade union. We have lived among trade unionists all our lives; we know what trade unionism means, and we appreciate its value, whereas a large number of members of the British Medical Association know nothing whatsoever about trade unionism. In fact, they rather despise it and consider themselves above that sort of thing—above using the only effective weapon at our disposal. Our bread and butter depends on the spirit of trade unionism we can develop in our ranks." Within the last few weeks, I was assured, nearly every practitioner in Lanarkshire had signified his readiness to join a fighting union and help to build up a strike fund. An executive committee with chairman had been appointed, as also a paid secretary. In regard to the latter

post, they meant business. They were not going to elect some eminent medical man who stood high in the ranks of his profession and had distinguished himself in his science. What had that got to do with organising a movement to raise practitioners from real poverty? They had appointed for secretary a solicitor who would keep them on the right side of the law and see there were no flaws in the contracts they might have to sign. In Midlothian a practitioners' union was being formed on similar lines, and in Ayrshire the members of the profession are showing a dissatisfaction which may be expressed in a similar way.

Increase of Miners' Contributions for Medical Service.

In the face of such a bellicose spirit it seemed to me as though the Insurance Act has greatly changed the views of medical practitioners. It has engendered the spirit of organisation, and suggested the possibility of collective action. Everywhere the same observation has been made to me in all the places that I have visited. The Act has brought the members of the profession closer together; and, with the growth of strength which union secures, grievances that have been endured because remedy seemed hopeless are now brought forward as having entered the domain of practical politics. Thus, at Bothwell, I found medical practitioners distinctly militant in their intention to stand up for their professional rights; yet, instead of having some new cause of complaint, it can be argued that their material position had been improved, in any case so far as the miners are concerned. Formerly, one married and one unmarried miner (50 per cent. only of the miners being married) paid each 13*s.* a year. Estimating the family of the married man at five, this makes 26*s.* a year for a total of six persons. For this sum they all received medical attendance and medicine. To-day these two men are insured persons and 8*s.* 6*d.* is paid on their behalf under the Act, so that they may get medical attendance, special tuberculosis treatment, and medicine. This is an annual total of 17*s.* Then these two men also pay 2*d.* a week each, or 8*s.* 8*d.* a year, and that is a total of 17*s.* 4*d.*, to secure medical treatment and medicine for the wife and children. Thus the medical profession and the dispensing chemist obtain under the Act, and in accordance with the agreement concluded with the Miners' Federation, an annual total of 34*s.* 4*d.* for attending to six persons; whereas before the Act they only received 26*s.* This is undoubtedly a very substantial increase. There may be losses in other directions, but so far as the miners are concerned more is paid than was ever given before for the medical attendance they receive, and they constitute the vast majority of the population at Bothwell. The position would not of course be so favourable if a larger proportion of miners were married, if the bachelors were to refuse to help in bearing the married men's burdens, or if the average of five per family proved to be below the actual figure.

If it came to reopening the negotiations the colliery surgeons feel that they stand unarmed in front of so formidable an organisation as the Miners' Federation. By its influence in Parliament, where so many miners, men who have actually worked in the pits, occupy safe seats, by its discipline, by its financial resources, amounting to some millions sterling, the Miners' Federation stands like a giant by the side of whatever pretence at organisation the medical profession may possess. The medical advisers to the middle and upper classes who live in residential districts and fashionable quarters have no conception of these things. But the colliery surgeon sees what the forces of organised labour can do, and he bitterly resents the inferior organisation and comparative weakness of his own profession.

(To be continued.)

ROYAL INSTITUTION OF GREAT BRITAIN.—A course of three lectures on Recent Physiological Inquiries by Professor W. Stirling, M.D., is now in progress at the Royal Institution, Albemarle-street, London, W. The lectures will be illustrated by means of the kinematograph, epidiascope, autochrome, and other lantern slides and by experiments. The first lecture, on Tuesday last, was on Motion and Locomotion. Lecture II. will be delivered at 3 P.M. on Tuesday, May 6th, on Equilibration and the Sixth Sense, and Lecture III. will be delivered at 3 P.M. on Monday, May 12th, on Ductless Glands and their Dominating Influences.

THE GERMAN SURGICAL CONGRESS.

(FROM OUR BERLIN CORRESPONDENT.)

(Concluded from page 1200.)

Collargol in Septicæmia and Cancer.

Professor KAUSCH (Berlin) said that in septicæmia with remittent pyrexia collargol had always been efficacious, but that in cases with continuous pyrexia there was little effect. It was, however, very useful when there was continuous pyrexia after the opening of an abscess. Intravenous injection was the best method of administration; rectal injection was not advisable unless intravenous injection was not allowed by the patient. The usual dose was 10 grammes of a 2 per cent. solution. When the effect of this was insufficient, or the case was very severe, from 20 to 30 grammes must be injected daily or every second day. Professor Kausch also treated 11 cases of inoperable cancer by large doses of collargol up to 100 grammes, combined with Roentgen rays. None of the patients recovered, although a case of cancer of the liver was temporarily relieved. One patient died three days after the injection of 80 grammes, and at the necropsy the kidney was found to be obstructed by a silver precipitate.

Operations on the Brain.

Professor VON EISELSBERG (Vienna) reported the results of his operations for tumours of the brain. He had operated upon 162 cases. Growths of the cerebrum occurred in 69 patients, and in 40 of the cases they were removed, with 9 deaths—5 from meningitis, 3 from shock, and 1 from pneumonia. At a later period 8 patients died from various causes, including a relapse of the growth and prolapse of the brain; 6 were improved, and 9 recovered. In 16 cases growths of the hypophysis were operated upon. In 33 cases an operation was performed for tumours of the cerebellum, 17 for tumours of the auditory nucleus. The latter had the worst prognosis, as 11 out of 17 patients died. In 29 cases trephining was performed for palliative reasons. Previous to the operation lactate of calcium and urotropine were administered. The operation was usually performed under local anæsthesia. Hæmorrhage of the bones of the skull was stopped by driving in wooden pins. The operations were as a rule made in two stages and drainage was avoided. Osteoplastic methods were not employed in operations on the cerebellum. Tumours of the auditory nucleus were operated on according to Krause's method. Defects of the dura mater were covered by plastic flaps of the fascia, so that the danger of infection was considerably diminished. Nevertheless, 11 patients died from meningitis and 19 from shock. Although the prognosis of the operation was unfavourable, it must be considered that the cases themselves were very sad.

Operations on the Spine.

Professor RANZI (Vienna) reported 40 operations on the spine performed in Professor Eiselsberg's clinic. Of these patients, 17 suffered from growths, 5 from fractures, and 2 from spondylitis; there were also 16 cases of Förster's operation. The operations were performed under general anæsthesia with injections of adrenalin. The vertebral arches were always removed. In opening the dura mater a quick discharge of the cerebro-spinal fluid must be avoided. The dura mater must be opened, even when the growth had an extradural position, because multiple growths might be present. In Förster's operation the extradural procedure, according to Guleke's method, showed a remarkable progress. After the operation the dura mater must be exactly sutured and plugging must be avoided. Of the 40 cases, 30 ended fatally. Of the various growths, the extradural had the best prognosis. Förster's operation was especially efficacious in spastic paresis of the lower extremities.

Professor KÜTTNER (Breslau) gave a report of his operations for cerebral tumours. He stated that an early diagnosis was very difficult. Trephining was frequently performed in doubtful cases above and below the tentorium. He had obtained good results by puncture according to Neisser's and Pollack's method, but the effect produced by puncture of the corpus callosum was less favourable. He operated in two stages under local anæsthesia and made an osteoplastic flap. Suturing of the dura mater was seldom performed. He had operated in 92 cases

with a primary mortality of 30·5 per cent. A permanent recovery was obtained in 30·5 per cent.

Professor OPPENHEIM (Berlin) stated that the prognosis of operations for tumours of the brain had become worse of late years, the reason being in his opinion that a large proportion of doubtful cases were now operated on and that the indications for the operation have been extended.

Professor SCHLOFFER (Prague) read a paper on operations for visual disturbances caused by "tower skull" (Turm-Schädel). He said that he had removed in two cases the upper wall of the optic canal after having previously lifted temporarily the frontal bone with the dura mater. The patients were two boys in whom other operations (puncture of the corpus callosum and trephining) had been inefficacious. In one of the cases the eye, which hitherto had been amaurotic, had a perception of light three weeks after the operation.

Professor RITTER (Posen) described his method of arresting hæmorrhage in operations on the brain. He made the carotid arteries on both sides accessible and applied a clamp forceps temporarily. A complete arterial anæmia of the brain was obtained at once and the hæmorrhage from the veins stopped after a short time. He had operated in this way on three cases, the lesions being respectively fracture of the skull with depression, subcortical tumour, and purulent mastoiditis. The patients bore the operation very well. From the moment when the forceps was applied no anæsthetic was wanted; they awoke very soon and did not vomit.

Operations on the Kidney.

Professor KÜMMELL (Hamburg) gave a report of his definitive results in 386 cases of nephrectomy. He said that in tuberculosis recoveries were obtained in 80 per cent., in malignant growths in 40 per cent., in hydronephrosis in 98 per cent., and in pyonephrosis in 90 per cent. Unilateral mechanical injuries had a good prognosis, but Bright's disease a bad one. In polycystic degeneration nephrectomy was contraindicated. In tuberculosis a definitive recovery might be presumed after two years, and in cancer after four years if no relapse has occurred within these limits. A great number of the patients who had been operated on died within the first year. An affection of the other kidney in tuberculosis made the prognosis worse, but in some cases recovery occurred nevertheless—in one case after an incision of the kidney. Women with one kidney passed through pregnancy tolerably well, for among 17 cases Bright's disease and premature birth occurred respectively only once. Morphine, ether, and diphtheria antitoxin were well supported by patients with one kidney, but veronal and chloral badly.

Dr. BÄTZNER reported the results of 100 cases of nephrectomy performed in the Berlin University Clinic from 1901 to 1912. In 9 cases there was a fatal issue in connexion with the operation; of the remaining patients 28 died from accidental diseases, 3 from uræmia, and 60 were still alive. The worst results were obtained in cases of malignant growth, as all the 18 patients died from a local relapse or from metastases. The results in cases of hydronephrosis and of pyonephrosis were very good, and so were those in cases of Bright's disease, acute inflammation of the kidney, and tuberculosis.

Dr. VOELKER (Heidelberg) said that tuberculous foci in the kidney might heal up spontaneously, but that the tissue of the kidney was destroyed. Conservative treatment must therefore be deprecated even in slight cases.

Thymectomy for Graves's Disease.

Professor VON HABERER (Vienna) said that he had performed thymectomy in four cases of Graves's disease. In a fifth case the thymus gland was removed for symptoms of stenosis. The operations were successful. He mentioned especially a case in which grave symptoms were present and became worse after resection and ligature of the thyroid gland. Thymectomy was then performed, but only a rather small thymus body was found. Nevertheless, the success was striking; the dilatation of the heart no longer existed, the pulse-rate fell to 84, the nervous symptoms and the congestion of the liver disappeared, and the patient was able to engage in mountain climbing.

Operations on the Gall-bladder.

Professor KEHR (Berlin) reported the results of 2000 operations on the gall-bladder. Comparing his second with his first 1000 he said that the general mortality had become worse owing to the increase of malignant cases. The mortality of operations for gall-stones had decreased, especially in the cases in which the operation included draining the hepatic duct. Cystotomy has altogether been abandoned. As one result of his large experiences, he said that peritonitis was no longer met with as a sequel of operation, neither was there any infection of the wound when the subcutaneous fatty tissue was not sutured. The danger of hæmorrhage in icteric patients was still rather great; there was only one remedy against it—namely, an early operation before cholæmic symptoms appeared.

Military Surgery.

Dr. GOEBEL (Breslau) described some of his experiences at the war in Tripoli. He mentioned lesions caused by bombs thrown from aeroplanes; they were distinguished by their multiplicity, by the localisation of the lesions on the lower extremities and the trunk, and by a characteristic course of the track of the projectile through the tissues. They were caused mostly by shrapnel bullets. In Tripoli enteric fever showed many surgical complications, including abscess of the parotid gland, empyema, abscess of the appendix vermiformis, and gangrene of the leg and the toes.

Dr. COENEN (Breslau) reported his experiences in Athens during the Balkan war. He had treated 665 patients suffering from gunshot wounds, of whom 7 died, whilst 75 per cent. recovered without any complication. Thirty cases of severe cellulitis were treated by large incisions and in four instances by amputation. Among 23 cases of wounds of the joints, 4 resections and 1 amputation were performed; the other patients recovered without operations. Of 94 compound fractures, 83 healed by primary union, 11 with complications and 1 case after amputation. Aneurysms occurred in 5 cases; they were operated on when they had become encapsuled. Wounds of the spine gave a bad prognosis owing to the occurrence of bedsore and infection of the bladder.

Dr. KIRSCHNER (Königsberg) gave an account of his experiences in Sofia and Mustafa-Pascha with the Bulgarian forces. Owing to unsuitable transport arrangements and defective first-aid, secondary infection of wounds of the bones, the vessels, and the joints was frequently observed. The wounded arrived at the hospital in a state of exhaustion. Immediate fixation of these wounds by a plaster bandage at the dressing-station was absolutely necessary. For wounds of the soft tissues the starch mastisol dressing was the best method.

Dr. FRANK (Berlin), who had worked in an intermediate hospital with the Greeks, said that the first field dressing carried by each soldier had been very useful. Mastisol proved to be a barrier, not only against bacteria, but also against vermin. Wounds caused by artillery bullets often became infected. Erysipelas was seldom observed and tetanus never. Pyocyaneus infection was frequent. Meningitis often occurred when trephining had been performed in the dressing station. Wounds of the calf of the leg were frequent, and were of bad prognosis with respect to the recovery of function.

Dr. GOLDAMMER (Berlin) expressed the opinion that the frequency of infections was somewhat underestimated, according to his experiences in a hospital of the first line where the infected patients were left who could not be transported to the base hospitals. He had obtained good results in the treatment of infected wounds by the use of passive congestion according to Bier's method.

Dr. VERTH (Kiel), a naval surgeon, spoke on the peculiarities of wounds inflicted in a naval engagement according to experiences in the Russo-Japanese war. In a naval engagement the majority of wounds were caused by artillery fire, mines, and torpedoes. In the above war 75 per cent. of the wounds were due to artillery and 25 per cent. to mines and torpedoes. When an encounter took place on an average 20 per cent. of the crew were injured, of whom 4 per cent. died; 8 per cent. were severely, and 8 per cent. slightly, wounded. Concerning the wounds themselves, he stated that one-quarter of the wounds were contusions, one-third were contused wounds, one-sixth were penetrating wounds, one-tenth were mutilations, one-tenth were burns, and one-tenth were lesions of the eyes and the ears. Injuries of the viscera might be expected in about 5 per cent., and fractures in 20 per cent.

Dr. CLAIRMONT (Vienna) read a paper on Gunshot Wounds of the Skull. He said that these wounds must always be regarded as infected because the brain did not overcome slight infection as easily as other parts of the body did. Tangential wounds gave the worst prognosis and required surgical interference at all periods.

Considerations of space preclude an enumeration of the numerous other papers read at the meetings.

Professor MÜLLER (Rostock) was elected President of the next Congress.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Certification under the National Insurance Act.

THE Insurance Commissioners last week summoned conferences between representatives of the Insurance Committees and of the Approved Societies in the various areas where the panels have failed to fill. In Dublin the conference was held last Monday, and a discussion took place on the question of appointing whole- or part-time referees, but it was felt that such a step would lead to unpleasant friction between the medical attendants and the certifying referees. Eventually a resolution was adopted requesting the medical profession to reconsider the question of fees, and to appoint a delegation with full powers to meet the conference. Failing action by the profession, the conference recommended that the Commission should hand over to the societies their appropriate share of the grant, and that the societies should be left to make their own arrangements. It is believed that if the societies get control of the grant they will be willing to pay a fee of 2*s.* 6*d.* per certificate, the sum demanded by the profession. Indignation has been roused among the medical men of county Longford by the statement of the chairman of the Insurance Commission that a panel had been "completed" in that county. It is stated by the Local Medical Committee that it holds the written pledge of every medical man practising in the county not to go on the panel. It is to be noted that the Commissioners have not yet divulged the names of those said to be on the panels. At the meeting of the Conjoint Committee on April 26th a resolution was passed pointing out to the Commission that the attempt to obtain medical certificates from medical men other than those in attendance on the patients would be in contravention of the recognised ethics of the profession. A discussion also took place with reference to a pledge said to have been given on behalf of the Irish Parliamentary party to obtain for the medical profession a minimum capitation fee of 2*s.* 6*d.* for certificates. Having heard the statement of Mr. Thomas Hennessy, supported by letters from Mr. J. C. Lardner, M.P., Mr. J. Cullinan, M.P., and Mr. J. S. McArdle, the Committee was of opinion that the National Insurance Act Committee of the Irish party had made a definite offer to the profession of the fee named.

The Poor-law Medical Officers' Committee (I.M.A.) at their meeting in Dublin on April 21st passed a series of resolutions condemnatory of the arrangements for certifying under the National Insurance Act, and severely criticising the action of the "Conjoint Committee." The Belfast board of guardians have asked for a return from their dispensary doctors showing the proportion of insured persons treated in the dispensary (Poor-law) for the quarter to the end of June to see if it is true—as alleged—that Friendly Societies in Belfast were getting the benefit of the Poor-law dispensary for their members. The medical practitioners of Lisburn have founded an association, and have agreed not to form a panel for certification under the National Insurance Act. It is also said that the rural doctors around Lisburn have decided not to go on the panel. At a meeting of Friendly and Approved Societies held in Belfast on April 22nd the feeling was so strong against bringing in the dependents—should medical benefit become extended to Ireland—that when a resolution was proposed advocating this plan it found no seconder. The meeting instructed their delegates to the London Conference to ask that if medical benefit was extended to Ireland it should be done simply as it is being worked in England.

The Meath Hospital.

The annual meeting of the Meath Hospital, Dublin, was held last Monday. The report for the year stated that there were in the wards of the hospital on April 1st, 1912, 121 patients; 1379 were admitted during the year, making 1500. Of these, 1273 were discharged cured or relieved, 105 died (25 being moribund when admitted), and 122 remained on March 31st, 1913. The total number of days spent in hospital was 42,214. The average daily number of beds occupied was 115·66. The average number of days spent in hospital by each patient was 30·61, and the mortality was 7·62 on the total treated to a termination. There were also 9840 accident cases treated as out-patients, and the dispensary cases numbered 9544. There was, therefore, a total of 20,884 persons who received medical or surgical treatment during the year. The number of attendances at the out-patient departments amounted to 31,736. There was at the commencement of the financial year a debit balance of £7528 17*s.* The total expenditure was £7294 1*s.* 11*d.*, and the total ordinary income £6313 11*s.* 6*d.*, showing a deficiency on the year of £980 10*s.* 5*d.*, which increased the debit balance to £8509 7*s.* 5*d.* The managing committee fears that unless more voluntary subscriptions are received it will be compelled to curtail the number of beds.

Belfast Nervous Diseases Hospital.

At a special meeting of the committee of management of the Hospital for Nervous Diseases, Belfast, held on April 25th, a minute was adopted expressive of the deep loss the institution had sustained by the death of Dr. J. M. MacCormac, who 16 years ago founded the hospital, and appreciative of his good work there. An extract of this minute was directed to be sent to Mrs. MacCormac.

April 28th.

ERRATA.—Mr. H. W. Bailie, medical superintendent officer of health of the city of Belfast, writes to correct two inaccuracies in the Irish letter in THE LANCET for April 19th, p. 1130. The number of cases of diphtheria notified since October, 1912, was 182, not 300, and the number of cases notified in March was 34, and not 154, as stated by our correspondent.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Obituary.

Two members of the Academy of Medicine have died in the same week—viz., Professor Jaccoud and M. Yvon. Professor Jaccoud had been permanent secretary of the Academy since 1901. He attained a distinguished position in medicine without any initial advantages. He defrayed the heavy cost of medical study out of his earnings as first violin at the Opéra Comique. His thesis for the doctorate in 1860 was on the pathogenesis of albuminuria, and in 1863 he published a comparative study of ancient and modern humoralism. In 1864 his work on motor paralyses and ataxias was published and was received with enthusiasm. In 1871 he published his clinical lectures, followed by a treatise on internal pathology, and in 1876 by a dictionary of practical medicine. In 1877 he was appointed a professor of the Paris Faculty of Medicine and in the same year was elected a member of the Academy, where his erudition, his eloquence, and his remarkable memory were greatly appreciated. This exceptional memory enabled him to learn by heart the memorial addresses that he had to deliver in his capacity of permanent secretary of the Academy, surprising his hearers by the accumulation of dates, of proper names, and of quotations. In spite, however, of the admiration he aroused, the somewhat disdainful hauteur with which he judged of certain works was a source of surprise. Careless of popularity, while he took no trouble to gain the esteem of his *confrères* or the admiration of his pupils, he nevertheless secured the respect of all. M. Yvon, a member of the Section of Pharmacy of the Academy of Medicine, was one of the most active personalities and one of the best informed and most courteous of the Parisian scientific world. Besides active collaboration in the preparation and revision of the Codex, an immense work in itself to which he modestly devoted much of his life, he published some notable studies on the preparation of certain drugs, an elaborate monograph upon ergot and its derivatives, and other works.

The Surgical Treatment of Hæmorrhoids.

At the Société des Chirurgiens de Paris on April 11th M. Abel Desjardins said that to ensure a complete cure of hæmorrhoids, whatever operation was employed, it was necessary to remove the entire hæmorrhoidal plexus, to resect the mucosa, which was always affected, and to dilate the sphincter. He could not admit the alleged defects attributed to Whitehead's operation, but regarded them as the results of defective technique. He then described his own method, which had given him excellent results.

Explosion at the Hôpital Laennec.

A serious explosion occurred on April 25th in the laboratory of one of the wards of the Hôpital Laennec, causing great alarm among the patients, many of whom crept under their beds or attempted to escape, while the more helpless ones uttered heartrending cries. The ward attendants finally calmed them and no one was injured, but the laboratory and all its contents were destroyed, and a fire was prevented only by the promptitude of those on duty.

The Prophylaxis and Specific Treatment of Typhoid Fever.

On April 22nd M. Debove presented to the Academy of Medicine a communication by Dr. Petrovitch, in charge of the infectious diseases hospital at Uskub, on the effects of serum therapy and antityphoid inoculation in typhoid fever. Up to the present time antityphoid inoculation has not been used in the Servian troops, but Dr. Petrovitch practised it in the case of persons who were brought especially into contact with typhoid patients. He employed the vaccine in a small dose to avoid the dangers of the negative phase. Beginning with himself, he made 120 injections, using a dose equal to 100 millions of bacilli killed by heat and diluted with a cubic centimetre of physiological serum. Notwithstanding the impossibility of the vaccinated persons removing themselves from the typhoid influence during the period immediately following the inoculation, only two of these persons contracted typhoid fever, and that in a very benign form. They became convalescent, one in 14 days, the other in 20. In the treatment of the disease Dr. Petrovitch used the vaccine employed in the British army, made from Eberth's bacilli killed by heat. An injection of the vaccine diluted with physiological serum, and corresponding to 20,000,000 of Eberth's bacilli, was given in each case in the subclavicular region. The number of typhoid patients admitted to hospital was 680, of whom 460 were submitted to bacteriotherapy. The other 220 patients preferred not to undergo it. Both groups were also treated with cold baths. The number of injections varied between one and three. Excluding those who died within 24 hours of admission, the mortality was 2·9 per cent. of the vaccinated and 12·8 per cent. of those treated exclusively with cold baths, both classes of patients being cared for in the same wards and subjected to the same regimen. There were very few patients among the Servian soldiers so long as they lived in the open air and slept in tents or in the open. It was only when the troops had to be lodged in buildings in the conquered towns that the crowding and uncleanliness combined gave rise to epidemics of dysentery and typhoid fever.

April 28th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Medical Department of the Austro-Hungarian Army in Readiness for War.

THE proximity of the countries engaged in the recent war, together with the intimate national and racial relations between a portion of the belligerents and the Austrian Empire, has made it most important for us to be prepared for any and every emergency in the near future. Prominent among such precautions would be the bringing of the medical department of the army into a state of complete readiness for active service, because the experience of all the surgeons, whether of the Red Cross Society or of the volunteer expeditions, who were able to see active service at the front proves the utter inadequacy of all the medical and hygienic preparations made by the belligerents on both sides. The Vienna Gesellschaft der Aerzte has done much to elucidate the real state of affairs by organising a series of lectures and discussions on this subject, mostly delivered by surgeons returning from the battlefield, where they had been working for several weeks. Among the various papers a most able one was read by Professor Hochenegg, the director of the first surgical clinic in the Vienna General Hospital. He summarised the necessary preparations under three heads—namely: (1) medical aid for the sick and wounded soldiers; (2) the nursing staff; and (3) the materials for sanitary purposes. He calculated that, in accordance with the percentage of casualties found in the recent engagements, a minimum of 100,000 wounded men would have to be cared for. The Austrian Red Cross Society had accommodation ready in its hospitals for only 10,000 men, whilst another 50,000 wounded would fall to the care of the Austrian army, the remaining 40,000 being in the care of the Hungarian part of our Empire. These 50,000 would have to be made fit for transport in the field hospitals before being sent to the rear. Assuming that 20 men could be accommodated in one room, 250 hospitals, each having ten rooms (200 beds), would be required for this purpose in the field. Each ward or field hospital ought to have at least one surgeon in charge and two surgically competent assistants. This number of surgeons was not at present provided for in the army, and the reserve of medical officers ought to be distributed amongst the regiments according to this principle. Even worse conditions prevailed as regards the nursing staff. The Red Cross Society had a fairly sufficient staff for its hospitals, but the remaining 50,000 patients would require at least 500 thoroughly trained nurses (2 per hospital) who would be able to work as head nurses, with another 7500 assistant nurses (3 per room of 20 beds, or 30 per hospital). Austria has not so many nurses, and therefore they would have to be sought from those volunteering for that service. Moreover, besides those nurses who would be wanted in the hospitals, a very large number would be required for substitution in other hospitals, whence the regular sisters would be called to the front, also for convalescent homes and for infectious and contagious wards, so that a total of 25,000 nurses would not be far from the actual figure wanted. But the experience of the Austrian surgeons in the Balkan cities, where they have had to deal with voluntary nurses (those who offered their services coming from all classes of the population), was very discouraging. The people whom they had to employ were neither reliable, earnest, nor willing, and the only result was a complete breakdown of the voluntary nursing system. Professor Hochenegg therefore advised a very energetic action in this respect in order to secure the indispensable number of female nurses in case of need. The third point of his paper dealt with the medical requisites for the sick and wounded in a modern war. The amount of dressings only wanted for 50,000 wounded was calculated at about 12,000,000 yards of roller bandages within one month, and all other substances (alcohol, ether, chloroform, ointments, solutions, &c.) would have to be provided for in enormous quantities. For this reason the factories should be bound by contracts to keep always a stock ready for immediate delivery sufficient at least for four weeks. It has happened several times that factories have been sold out for days owing to the demands upon their resources during the Balkan war. It was also important to be prepared for outbreaks of war-borne epidemics such as cholera, dysentery, typhoid fever, smallpox, tetanus, and the like. Large stocks of vaccines and serum should always be at hand in the State laboratories, and a well-equipped corps should be organised for the purpose of dealing with such an outbreak, either at the front or in the rear of the army. Prompted by the interesting paper read before the society, Dr. Steiner, the principal staff surgeon of the Austrian Military Medical Corps, stated at once what preparations the army authorities had already made to meet any emergency. First of all, he said, the army was prepared to provide more than double the number of beds mentioned in the paper, and a large number of soldiers were fully trained as nurses. The stocks of medical requisites were also amply sufficient and were being constantly replenished, as well as kept up to date by very frequent inspections. Indiarubber goods were the only articles kept in stock to a limited extent, because they soon became deteriorated if not frequently used, but contracts had been made providing for immediate delivery of a sufficiency of this class of requisite on a day's notice

being given to the factories. The army authorities, however, viewed with some anxiety the difficulty of procuring a sufficiently numerous and adequately trained female nursing staff, and would encourage in every way the efforts of the Austrian Red Cross Society to induce females of the better classes to take up the profession of trained nurses. For this purpose it was important to increase the number of the members. Whilst Japan had more than 2,000,000 members of the Red Cross Society (5 per cent. of the population) and Germany had 600,000 (1 per cent. of the population), we had hardly 60,000 (0·2 per cent. of the population).

The Sale of Pathogenic Micro-organisms.

The recent criminal case at Frankfort, in which a man tried to kill his wife by injecting her with pathogenic bacteria, has brought to the notice of the public and the authorities how easy it is to obtain virulent substances convenient for secret administration with felonious intent. The sero-therapeutic institute in Vienna, where the famous "Kral Museum" is situated, contains stocks of nearly all the organisms known to science. It used to provide bacteria only for scientific institutes, but the present case has shown that all the care which might have been expected has not been taken, for the would-be murderer bought his bacteria by pretending to be the owner of a chemical laboratory. In consequence of this criminal attempt strict precautions have now been adopted, so that in future such dangerous objects as pathogenic bacteria will not be supplied to any person who may make an improper use of them. None but officially recognised institutes and medical men of acknowledged scientific standing will be able to procure them from Vienna.

April 28th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Dominion Registration.

THE next meeting of the Medical Council of Canada will be held at Ottawa on June 17th and four following days. It is expected that by that time the Council will be in a position to open the new Register to all those who have been in active practice in Canada for ten years prior to Nov. 7th, 1912, the date on which the Canada Medical Act came into force.

Annual Meeting of the Canadian Medical Association.

The annual meeting of the Canadian Medical Association will be held in London, Ontario, on June 24th, 25th, 26th, and 27th, under the presidency of Dr. Hugh A. Macallum, Dr. W. W. Francis, of Montreal, being the general secretary. The programme for the first two days will be devoted to the sections in medicine, surgery, gynæcology, obstetrics, pathology, public health, eye, ear, nose and throat, and X rays. On the morning of the first day Professor McPhedran, of Toronto University, will open a discussion on diseases of the stomach, and Dr. C. F. Martin, of Montreal, Dr. Charles R. Stockton, of Buffalo, U.S.A., Dr. C. D. Aaron, of Detroit, U.S.A., and Mr. H. J. Paterson, F.R.C.S., of London, England, with others will take part. The address in medicine will be delivered by Dr. Llewellys Barker, of Baltimore; that in surgery by Dr. Alex. Hutchison, of Montreal; and that in gynæcology by Dr. Thomas Cullen, of Baltimore. There is to be a symposium on the thyroid gland, introduced by Dr. A. J. Oschner, of Chicago. Dr. Frank Billings, of Chicago, will conduct a medical clinic, and Dr. J. B. Murphy, of Chicago, will give a lantern demonstration on surgical diseases of the bones and joints.

Dr. Friedmann's Visit to Canada.

In March Dr. Friedmann came to Canada from New York, and was courteously received by the Canadian medical profession. He treated patients in Montreal, Ottawa, Toronto, and London. He was invited to Toronto by the University, which has led to some criticism of the University for inviting a demonstration of a secret remedy. Not a single cure has been reported up to date, but the profession in Canada are keeping an open mind, with a disposition to wait patiently for results. Of course, the lay press found Dr. Friedmann's visit profitable from a newspaper standpoint. The professional press, both in the United States and Canada, is wondering why Dr. Friedmann passed by England and France to demonstrate his "cure" on this side the Atlantic.

Canadian Association for the Prevention of Tuberculosis.

At the annual meeting of this association, held in Ottawa on March 12th and 13th, over 150 medical men were present from different points in Canada, as well as a number of lay delegates. The Hon. Adam Beck, London, Ontario, presided, and the meeting was graced by the presence of H.R.H. the Duke of Connaught, who has always manifested great interest in the work of the association. Dr. Friedmann was present, and read a paper on his "cure."

Cocaine in Canada.

The Academy of Medicine, Toronto, and the Montreal Medico-Chirurgical Society have recently passed resolutions calling the attention of the Federal Government to the importation into Canada of a certain asthma remedy which contains a considerable amount of cocaine. They urge that if it be allowed to enter Canada at all it should be obtainable by the public only on the prescription of a local registered practitioner.

Vancouver General Hospital.

The city of Vancouver recently voted $375,000 for extending the work of this hospital. A nurses' home is to be built, two units of an isolation hospital, and a service building. A new wing was added last year, and when this is finally completed and furnished there will be accommodation in the main building of the institution for 375 beds. During the past year 377 deaths occurred in the institution, the number of patients treated being 5231. The daily cost per patient was $1.98. The hospital is in debt to the amount of $42,000.

April 15th.

THE NATIONAL INSURANCE ACT.

LONDON INSURANCE COMMITTEE.

AT the meeting of the London Insurance Committee on April 24th the medical benefit subcommittee recommended the extension of the medical ticket until July 14th in order that the medical register might be completed and insured persons given a further opportunity of selecting their doctors. On this report there was an attempt to initiate a debate on a proposal to limit the number of persons who might be accepted by one person. The chairman, however, ruled that a matter of such importance could not be raised without notice, and the report was thereupon adopted.

Acceptance of a Limited Number of Patients.

The subcommittee also reported that it had had under consideration representations from medical men who expressed willingness to join the panel if they were permitted to limit the total number of persons whose treatment they were expected to undertake. It appeared that the extent of the private practices of a number of medical men was a bar to their unconditional consent to join the panel. In this connexion the subcommittee quoted an answer given in the House of Commons on Feb. 14th by the Financial Secretary to the Treasury to the effect that if an Insurance Committee allowed doctors to accept a limited number of lives these must be an "average sample" of lives, and the approval of other doctors on the panel must be obtained. The subcommittee understood that the suggested limitation would enable a large number of medical practitioners to join the panel. The Insurance Commissioners had stated that there would be no necessity to include names of medical practitioners in the lists of doctors supplied for use in each metropolitan borough, provided that their names were included in the alphabetical list for the whole county, and this list was publicly exhibited. The medical practitioners on the panel had already agreed to a proposal to allow a doctor to limit the number of insured persons accepted by him. The subcommittee recommended that doctors be permitted to join the panel for the purpose of treating a limited number of persons, and this was approved.

Complaint against a Medical Practitioner.

At the meeting of the Committee held on April 3rd the medical service subcommittee presented a report that a complaint had been made regarding a medical practitioner on the panel that when asked to attend a patient he said he wanted

"live men, not dying ones." The doctor denied absolutely the whole of the circumstances, but the subcommittee, after careful inquiry, reported that it was satisfied that the statements made by the complainant were correct. A recommendation that a copy of the report be forwarded to the practitioner was referred back to the subcommittee on the ground that more stringent action should be taken. The matter came before the Committee again on April 24th. It was pointed out by Mr. R. C. K. Ensor that under the Regulations the Committee had no middle course between the extreme measure of reporting to the Commissioners with a view to removal of the doctor from the panel, and doing nothing at all. Mr. E. B. Turner asked if it was not possible for the Committee to do something more definite than a vote of censure. Mr. O. E. Warburg, the chairman of the subcommittee, remarked that the punishment in this case was not contained in the fact that a transference of the patient to another medical man was proposed, that was merely incidental. The subcommittee felt that in conveying to the doctor, on the authority of the Insurance Committee, that after hearing his evidence in full the Committee had come to the conclusion he was not speaking the truth, a penalty of some severity was being inflicted. This expression of opinion would be on record, and it was tantamount to a reprimand.

The Committee approved the action taken by the subcommittee.

MANCHESTER MEDICAL COMMITTEE.

The Manchester Medical Committee was elected at a meeting, to which every medical practitioner in the city was invited, on Feb. 8th, 1913. The composition of the committee was decided upon as follows: (1) eight representatives from each district—North, South, West, and Central; (2) all medical practitioners appointed to the Manchester Insurance Committee; (3) two representatives of the medical women of Manchester.

The Manchester Medical Committee consists of Dr. T. A. Helme (chairman), Dr. C. G. L. Skinner and Dr. A. W. Chapman (vice-chairmen), Dr. J. D'Ewart (honorary treasurer), Dr. R. G. McGowan, 1, Thomas-street, Cheetham Hill, and Dr. A. E. Cotterill, 42, Brook-road, Fallowfield (honorary secretaries), together with 32 other members. The medical representatives on the Manchester Insurance Committee elected by the local medical profession are Dr. T. A. Helme and Dr. R. G. McGowan; those appointed by the Manchester city council are Dr. A. W. Chapman and Dr. J. Stavely Dick; those appointed by the Insurance Commissioners are Dr. E. Johnstone and Dr. E. M. Brockbank. The members of the profession on the Medical Service Subcommittee are Dr. T. A. Helme, Dr. C. G. L. Skinner, and Dr. A. E. Cotterill.

The following is the scale of fees agreed upon between the Manchester Medical Committee and the Manchester Insurance Committee:—

	£	s.	d.
1. Attendance on the patient at the practitioner's residence, surgery, or dispensary	0	2	0
2. Visit to the patient's residence	0	2	6
3. Special visit—i.e., a visit paid the same day *in response to a call received* after 10 A.M....	0	3	6
4. Night visit—i.e., a visit made between the hours of 9 P.M. and 9 A.M. *in response to a call received* between those hours ...	0	5	0
5. Surgical operation requiring local anæsthesia (other than incision of abscess)	0	10	6
6. Cases of abortion and miscarriage to be treated at ordinary rates.			
7. Administration of a general anæsthetic	1	1	0
8. Setting of fracture or reduction of dislocation	0	10	6
9. Sanatorium benefit report, Med. 2...	0	5	0
Ordinary fees for succeeding visits or consultations.			

The Manchester Medical Committee having been asked whether certain procedures requiring a local anæsthetic are to be entered as operations under Section 5 of the above scale, a subcommittee has the question of further definition under consideration, and possibly it may be found desirable to arrange for a revised scale with a schedule dividing the operations commonly undertaken in general practice under local anæsthesia into groups at different fees. In the meantime the Committee advises practitioners to follow as closely as possible the lines of ordinary practice, and book as operations under local anæsthesia only such procedures as have hitherto been usually charged at the rate of 7*s.* 6*d.* or more in addition to the ordinary visiting or consultation fee.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—J. T. E. Evans (Sections I. and II.), St. Mary's Hospital; G. Fildes (Sections I. and II.), Manchester; H. C. C. Hackney (Sections I. and II.), King's College Hospital; R. Jones (Sections I. and II.), Charing Cross Hospital; A. J. V. Mathews (Sections I. and II.), St. Mary's Hospital; R. A. Robinson, Liverpool; H. P. Shackleton (Sections I. and II.), Leeds; R. L. M. Wallis (Sections I. and II.), St. Bartholomew's Hospital; and S. Zarchi (Sections I. and II.), Freiburg and London Hospital.

Medicine.—J. T. E. Evans (Sections I. and II.), St. Mary's Hospital; G. Fildes (Sections I. and II.), Manchester; H. C. C. Hackney (Sections I. and II.), King's College Hospital; G. R. Lynch (Section II.), St. Mary's Hospital; H. P. Shackleton (Sections I. and II.), Leeds; and R. L. M. Wallis (Sections I. and II.), St. Bartholomew's Hospital.

Forensic Medicine.—G. Fildes, Manchester; D. Havard, London Hospital; H. P. Shackleton, Leeds; and R. L. M. Wallis, St. Bartholomew's Hospital.

Midwifery.—H. P. Shackleton, Leeds; R. L. M. Wallis, St. Bartholomew's Hospital; and A. H. Willson, London Hospital.

The Diploma of the Society was granted to the following candidates, entitling them to practise in medicine, surgery, and midwifery:—J. T. E. Evans, H. C. C. Hackney, R. Jones, G. R. Lynch, A. J. V. Mathews, R. A. Robinson, H. P. Shackleton, R. L. M. Wallis, and S. Zarchi.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW AND ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH.—The recent examinations of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow, held in Glasgow, were concluded on April 10th. The following candidates passed the First Professional Examination:—

William Brown, Larkhall; Norman Stewart Bruce, Glasgow; Robert Phillips Crawford, Glasgow; Henry Godfrey FitzMaurice, Carlow; and John Alexander Murray, Glasgow.

The following candidates passed the Second Professional Examination:—

John Crawford, Paisley; Archibald Evans, Wales; David Andrew Imrie, Glasgow; Robert MacGregor, Glasgow; James Young M'Lean, Glasgow; James Maxwell Adams M'Vey, Glasgow; George Lynn Pillans, Glasgow; Henry Shaw, Belfast; William Templeton, Glasgow; Frederick William Thompson, Garliestown; and Reginald Leslie Wright, Derby.

The following candidates passed the Third Professional Examination:—

John William Cowie, Tillicoultry; John Rennie Carrie Gordon, Glasgow; and William Lyle Paterson, Glasgow.

The following candidates passed the Final Examination, and were admitted L.R.C.P.E., L.R.C.S.E., and L.R.F.P.S.G.:—

Stanley Cochrane, London; Alexander Morton Robertson, Glasgow; William Neville Pennant Williams, Holywell, Flintshire; Madeline MacWilliam, Stranraer; William Ewart Cruickshank, Glasgow; Michael Joseph Ahern, co. Kerry; Robert Craig, Glasgow; Manasseh Robert Mahbangeni, South Africa; John Francis Bourke, Hamilton; Joseph Robert Gwynne, India; George Logan Clark, Glasgow; Santhosham Swaminathan, Madras; Robert Sydney Miller, British Guiana; and Umanath Rao Hattiangadi, Mangalore, India.

FOREIGN UNIVERSITY INTELLIGENCE.—*Bahia:* Dr. Deocleciano Ramos has been appointed Professor of Medical Pathology.—*Genoa:* Dr. R. Pardo, of Modena, has been recognised as *privat-docent* of Ophthalmology.—*Gratz:* Dr. Rigobert Possek, *privat-docent* of ophthalmology, has been granted the title of Extraordinary Professor.—*Hamburg (Tuberculosis and Cancer Research Institute):* Dr. Freiherr von Dungern, of Heidelberg, has been appointed Director of the Institute.—*Leipsic:* Dr. B. Schweitzer has been recognised as *private-docent* of Midwifery and Gynæcology.—*Lemberg:* Dr. Anton Cieszynski, of Munich, has been appointed Extraordinary Professor of Odontology, and Dr. Josef Markowski has been appointed to the chair of Anatomy.—*Madrid:* Dr. Porpeta, of Granada, has been appointed to the chair of Anatomy.—*Modena:* Dr. L. Martinotti, of Genoa, has been recognised as *privat-docent* of Dermatology and Syphiligraphy.—*Naples:* Dr. Candela has been recognised as *privat-docent* of Medical Pathology, and Dr. A. Bianco and Dr. F. Carpaldo as *privat-docenten* of Otology and Laryngology.—*Padua:* Dr. Luigi Da Gaetani has been recognised as *privat-docent* of Anatomy.—*Rome:* Dr. Alfonso Cuzzi has been recognised as *privat-docent* of

Midwifery and Gynæcology; Dr. Manin Amante as *privat-docent* of Traumatic Affections; and Dr. Filippo Traetta-Mosca as *privat-docent* of Biological Chemistry.—*Turin:* Dr. F. Grignolo, of Genoa, has been recognised as *privat-docent* of Ophthalmology.—*Vienna:* Dr. Albert Müller and Dr. W. Neumann have been recognised as *privat-docenten* of Medicine.—*Würzburg:* Dr. K. Wessely, extraordinary professor of ophthalmology, has been promoted to the chair of that subject in succession to Dr. von Hess.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Caxton House, Westminster, on April 17th, with Sir Francis H. Champneys in the chair. A letter was considered from the town clerk of Birmingham with regard to the effect of the National Insurance Act on the work and future training of midwives. The Board directed that the town clerk of Birmingham be informed (*a*) that the question does not come within the scope of the duties of the Board, and (*b*) that the correspondence be forwarded to the Privy Council. A letter was considered from the Clerk of the Flintshire county council suggesting that the Board should adopt "a simpler form of case book ..... for the use of nurses." The Board directed that the clerk of the Flintshire county council be informed that the Board sympathises with the difficulty of the Flintshire county council, but the register has been carefully thought out, and it is hoped that the education of the midwives may so greatly improve as to render any alteration of it unnecessary. A letter was considered from the clerk of the Middlesex county council inquiring as to the extent to which "approved" midwives should themselves attend with their pupils (*a*) at the time of the confinement, and (*b*) during the lying-in period. The Board directed that the clerk of the Middlesex county council be informed that the Board holds each "approved" midwife directly responsible for the cases attended and for any neglect in supervising the training of pupils, but it does not specify the number of visits which must be paid, as this must vary greatly in different cases.—A special meeting of the Central Midwives Board was held on April 24th at Caxton House, Westminster, with Sir Francis H. Champneys in the chair. The Board considered the following charges amongst others against the midwives whose names are given below, and ordered them to be struck off the roll:—Emma Dickson, that being in attendance as a midwife at a confinement, the patient suffering from serious rupture of the perineum, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, nor did she hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner, as required by Rule E.20 (3); she attended the patient for eight days only, following the confinement; she discontinued her attendance at a time when the patient was seriously ill; and she did not at any time take the pulse or temperature of the patient, as required by Rule E. 13. Anna Hobbs, that being in attendance as a midwife at a confinement she paid only two visits to the patient; she neglected to take the patient's pulse or temperature, as required by Rule E. 13; she was not of sober habits; and she neglected to attend her patients with regularity and to pay an adequate number of visits. Nancy Sheldon, that being in attendance as a midwife at a confinement, the patient suffering from retained placenta, she endeavoured to secure its expulsion by traction on the cord, and a registered medical practitioner having been sent for she failed to notify the local supervising authority thereof, as required by Rule E. 21 (1). Esther Tiley, that being in attendance as a midwife at a confinement she endeavoured to assist delivery of the placenta by traction on the cord; she omitted to record in her register of cases the occurrence of any complication; and that she was unable to make use of a clinical thermometer, and consequently could not comply with Rule E. 13. Elizabeth Anne Wood, that being in attendance as a midwife at a confinement, the child suffering from inflammation of, and discharge from the eyes, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, nor did she hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner, as required by Rule E. 20 (5). The following midwives were cautioned after charges against them had been considered: Emma Josephine Chapman, Lydia Edwards, and Edith Elizabeth Tripp.

THE Royal Dental Hospital, Leicester-square, has received a donation of £100 from Mr. John Lewis, executor of the will of the late Miss Ames.

NURSING AND MIDWIFERY CONFERENCE.—The sixth annual conference was held last week at the Horticultural Hall, Westminster, when many subjects of interest were discussed, and the speakers included a number of medical men as well as nurses. Vaccine and the Tuberculin Treatment of Consumption were dealt with by Dr. W. d'Este Emery and Dr. Halliday G. Sutherland. Poor-law Nursing was dealt with by Miss Gibson, who pointed out the defects and suggested a central organisation by means of which the large unions could help the smaller ones; and by Miss Elma Smith, who gave an interesting account of some of the reforms which she had seen introduced during the last 20 years. In the Massage Session the principal speakers included Dr. J. S. Mackintosh and Dr. R. W. A. Salmond. The last two days were devoted to social work, finance, and nursing abroad. In the Midwifery Sessions many subjects of technical and professional interest were discussed. Dr. W. Douglas Knocker, barrister-at-law, traced the history of midwifery in England from the early Middle Ages down to the last century. Referring to Clause 1 (2) of the Midwives Act, he said it must be remembered that uncertified practice was forbidden "habitually *and* for gain," not "*or* for gain." This enabled a woman to practise for charity, or occasionally for gain. Several speakers dealt with the question of training in its various aspects, and all agreed that a longer training was necessary. Miss Alice Gregory and Miss Mona Wilson discussed the maternity benefit and midwives under the National Insurance Act, and Mrs. Stephen Glanville called attention to the professional outlook for midwives, which would be either improved or destroyed by the Act. In his address on Infant Feeding in Midwifery Practice, Dr. Eric Pritchard brought forward several interesting points. He insisted on the inability of the child's stomach at birth to assimilate food and the necessity of the development of the power of digestion along the lines of nature. All foreign matter was poisonous to the child's stomach and interfered with the development of the power of digestion. Even the colostrum of a wet nurse was foreign matter because the colostrum of one woman differed from that of another. He urged the plan of training an infant from the first to take a certain amount of food at absolutely regular intervals. He recommended three hours as a suitable interval. In Germany four-hour intervals had been adopted with success, but investigation seemed to show that English mothers did not secrete as much milk as German mothers. He had found the cheapest artificial food which could be given to an infant was dried separated milk, with the addition of linseed oil in order to supply the necessary fat. Mr. Bishop Harman gave a lecture on Ophthalmia, with epidiascopic illustrations, and Dr. J. S. Fairbairn addressed the midwives on their Duties and Dangers in Connexion with Venereal Disease.

ROYAL MEDICAL BENEVOLENT FUND.—At the April meeting 21 cases were considered and grants amounting to £200 voted to 18 of the applicants. Appended is an abstract of the cases relieved:—

Widow, aged 57, of L.R.C.P. Edin. Only income about 10s. a week from lodgers; children unable to help. Relieved three times, £34. Voted £10.—Widow, aged 51, of M.B., C.M. Glasg. Since husband's death ten years ago has been supported by a son, but asks for a little help to relieve him. Voted £5.—Daughter, aged 45, of late M.R.C.S. Was a district nurse for many years, but had to give up her post owing to feeble health and now tries to support herself by letting rooms. Relieved twice, £20. Voted £10.—Widow, aged 39, of L.R.C.P., L.R.C.S. Edin. Lost her husband about 12 months ago after several years' illness, and is now suffering from a grave internal complaint. No income. Three children, the eldest only 16. Voted £24.—Widow, aged 48, of L.R.C.P., L.R.C.S. Edin. Health too feeble to admit of occupation, and is allowed £1 a month by the Working Ladies' Guild. Is a candidate for a pension from the British Home and Hospital for Incurables. One child dependent and the others unable to help. Relieved 17 times, £196. Voted £12.—Widow, aged 43, of M.B., C.M. Aberd. Supplements an income of a few shillings a week by taking boarders, but having four young children finds great difficulty in meeting her unavoidable expenses. Relieved twice, £20. Voted £10.—Daughter, aged 66, of late M.R.C.S. Is mentally feeble, and for many years has been practically dependent on this Fund and a small pension given by another society. Relieved 14 times, £144. Voted £12.—

Daughter, aged 42, of late L.R.C.P., L.R.C.S. Edin. Endeavours to support herself by nursing, but finds great difficulty in obtaining engagements, and has recently been incapacitated by illness. Relieved eight times, £61. Voted £5.—Widow, aged 50, of M.B. Aberd. After husband's death supported herself by nursing, but broke down in health and has now for the last few years been quite incapacitated. No income, and dependent on a small weekly allowance from a sister and a little help from a married son. Relieved five times, £49. Voted £12.—Widow, aged 46, of M.R.C.S. Quite unprovided for at husband's death a few years ago from new growth, and has been obliged to give up a situation as mother's help on account of uncertain health. Is practically dependent on a step-son whose earnings are small. Relieved four times, £48. Voted £12.—Widow, aged 64, of M.R.C.S. Income less than 5s. a week, and is unavoidably deprived for the present of the help given by two of her children. Relieved three times, £36. Voted £12.—Daughter, aged 51, of late M.R.C.S. Used to be a governess, but has become nearly blind, and is quite unable to maintain herself. Relieved twice, £24. Voted £12.—M.D. Aberd., aged 60. Has suffered for several years from a spinal complaint, and is now practically bedridden. Receives help from other charitable societies, but having three children dependent is obliged to seek further assistance. Relieved three times, £33. Voted £10.—Widow, aged 68, of L.R.C.P., L.R.C.S. Edin. Only income a small pension from a charitable society, and is quite incapacitated by rheumatoid arthritis. No children. Relieved three times, £29. Voted £10.—Daughter, aged 60, of late M.D. Is quite helpless owing to an advanced nervous disease, and is practically dependent on this Fund and slight help given by friends. Relieved four times, £44. Voted £18.—Daughter, aged 67, of late M.R.C.S. No income, and only able to occasionally earn a few shillings a week. Relieved once, £12. Voted £12.—Wife, aged 48, of L.R.C.P., L.R.C.S. Edin. Since the mental breakdown of her husband five years ago has endeavoured to support herself by taking boarders; two sons, aged 20 and 17, the elder barely self-supporting and the younger an apprentice not yet earning anything. Relieved three times, £48. Voted £2 and case to be reconsidered next month.—Daughter, aged 70, of late M.R.C.S. At father's death many years ago was fairly provided for but lost some of her capital through the failure of a bank and the rest in the endeavour to establish a boarding-house. Now dependent on this Fund and a sister who can ill afford to help. Relieved three times, £36. Voted £12.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 15, Wimpole-street, London, W.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Edward Webb, of Studley Court, Stourbridge, the testator left £5000 to the Corbett Hospital, Amblecote, Staffs; £3000 for or towards a wing to be called the Margaret Jane Webb Wing in memory of his wife, and £2000 for the furnishing and equipment of that wing.—The late Colonel Frank Shuttleworth, of Old Warden Park, Biggleswade, has left by will £3000 to the Bedford County Hospital, £2000 to the Lincoln County Hospital, £1000 each to the Middlesex Hospital and the Cancer Hospital, Brompton; and £500 each to the Great Northern Central Hospital, the Bedford Dispensary, and the Lincoln Dispensary.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Sale of Inflammable Fabrics.

Mr. THEODORE TAYLOR, in introducing the Misdescription of Fabrics Bill in the House of Commons on Wednesday, April 23rd, announced that its sole object is to prevent the sellers of textile fabrics from describing as inflammable articles which are not so. The measure has been brought forward with a desire to lessen the number of burning fatalities which arise from flannelette clothing catching fire. The extent of this evil was revealed in the report of the Departmental Coroners Committee, which in 1910 recommended legislation to make it penal to describe as "safe," flannelette or other textile fabrics which were highly inflammable. The Bill does not prohibit the sale of these fabrics, nor does it require them to be marked "dangerous." It merely prohibits them being marked or represented as "safe against fire." The Bill was read a first time. Its backers include Dr. ADDISON, Mr. BOLAND, Colonel BROCKLEHURST, Sir FREDERICK CAWLEY, Sir HENRY CRAIK, Mr. FERENS, Mr. HILLS, Mr. JOYNSON-HICKS, Sir JOHN MCCALLUM, Mr. NUTTALL, and Mr. ALBERT SMITH.

Nurses' Registration Bill.

A deputation organised by the Central Committee for the State Registration of Trained Nurses, and introduced by Dr. CHAPPLE, M.P., was received by Mr. ASQUITH on Monday, April 28th. The Prime Minister, in answer to requests to give Government time for the passage of the Nurses' Registration Bill, declined to grant special facilities, but suggested that the supporters and opponents of the measure should confer in order to see whether an approach to unanimity could be reached.

Amongst those present were Mr. MUNRO FERGUSON, M.P., and Lady HELEN MUNRO FERGUSON, Dr. CHAPPLE, and the following delegates from affiliated societies:—The British Medical Association: Sir Victor Horsley, F.R.S.; Dr. Alfred Cox, medical secretary. The Matrons' Council of Great Britain and Ireland: Miss L. V. Haughton, matron, Guy's Hospital, London; Miss R. Cox-Davies, matron, Royal Free Hospital, London. The Royal British Nurses' Association: Dr. Comyns Berkeley, medical honorary secretary; Miss E. C. Tawney. The Society for the State Registration of Trained Nurses: Mrs. Bedford Fenwick, President; Miss Margaret Breay, honorary secretary. The Fever Nurses' Association: Dr. B. W. Goodall, Past President, Medical Superintendent, Eastern Fever Hospital; Dr. Biernacki, medical superintendent, Plaistow Fever Hospital. The Association for Promoting the Registration of Nurses in Scotland: Dr. D. J. Mackintosh, M.V.O., honorary secretary. The Scottish Nurses' Association: Dr. J. McGregor Robertson, Vice-President; Miss M. Dow, honorary treasurer. The Irish Nurses' Association: Miss M. Huxley, President; Miss Alice Reeves, matron, Royal Eye and Ear Hospital, Dublin. The National Council of Trained Nurses of Great Britain and Ireland: Miss E. M. Musson, Vice-President, Matron-General Hospital, Birmingham; Miss E. C. Barton, matron, Chelsea Poor-law Infirmary. The National Union of Women Workers of Great Britain and Ireland: Miss Agnes Garrett.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 23RD.

Insured Persons in Hospitals.

Mr. WORTHINGTON EVANS asked the Secretary to the Treasury whether in the case of an insured person without dependents having to pay 5s. a week for her maintenance in the Nelson Hospital during a time when she was otherwise qualified for sick benefit, the fact that she was in a hospital prevented her society paying her sick benefit although the society had made no arrangement for any payment to the hospital.—Mr. MASTERMAN replied: Under Section 12 of the National Insurance Act the sickness benefit is not payable directly to the insured person in the circumstances referred to in the question, but the sum which would ordinarily have been payable may be applied by the society in the provision of surgical appliances or otherwise for the benefit of the insured person.

Sale of Medicines in Portsmouth.

Lord CHARLES BERESFORD asked the Secretary of State for the Home Department whether he was aware that when he signed the closing order for medicine for the borough of Portsmouth 324 chemists signed a petition asking him to withhold his signature, and only 61 chemists were in favour of the closing order; and whether he would state exactly what was meant by the words "chemist's shop," in order that chemists might be quite clear as to their position and so avoid the prosecutions which occurred as matters stood at present.—Mr. MCKENNA wrote in reply: I received no such petition, but after the order was confirmed a local association sent me a letter saying that they had the signatures of 324 persons who were opposed to the order. Before the confirmation of the order the same association had sent me a petition against the order signed by 50 persons; but on a consideration of the report which was submitted to me by the town council as to the manner in which the register of shops had been prepared, I was satisfied that great care had been taken to include all persons who were entitled to vote on the order, and that the persons represented by the association carried on the business to a small extent only, and were not entitled under the provisions of the Act to be placed on the register. Of those who carried on the sale of medicines as their principal business, or as a substantial part of their business, a large majority were in favour of the order. As regards the last part of the question, the order applies generally to the sale of medicines and medical and surgical appliances, and does not specifically mention chemists' shops.

Nayland Sanatorium.

Mr. BURNS (President of the Local Government Board) informed Mr. WORTHINGTON EVANS that the proposals in regard to a grant for Nayland Sanatorium were still under consideration and no decision had been arrived at.

THURSDAY, APRIL 24TH.

Unregistered Dentists in Ireland.

Mr. CATHCART WASON asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was aware that, by a circular issuing from the Board of Education, London, prescribing that every person claiming to be recognised as a certificated teacher must have a certificate from a registered dental surgeon stating that such person had undergone the necessary dental treatment, whether such order applied to Ireland and whether the Irish Education Department was consulted thereon; and whether, in view of the hardship that would be inflicted on many applicants in Ireland, where there happened to be no registered dentists, and the slur inflicted on gentlemen who had long enjoyed the public confidence as dentists although unregistered, he would make further inquiry into the matter.—Mr. BIRRELL answered: The Board of Education have no jurisdiction in Ireland, but if Irish young men and women seek to obtain the Board's certificate they must comply with its requirements. I understand, however, that the Board are prepared to give special consideration to cases where no registered dentist is available. The matter is not one in which I have any power to interfere.

Mr. CATHCART WASON asked the right honourable gentleman how many registered dental practitioners there were in Ireland and what provision was made for dental inspection in schools.—Mr. BIRRELL wrote in reply: I am informed that there are about 200 registered dentists in Ireland. A sum of £5000 has been included in the Estimates for Public Education, Ireland, for the purposes of dental inspection in schools. The general principle on which the money is disbursed is a grant of £1 for each £1 of local contribution towards the total cost of dental inspection under each approved scheme.

Mental Deficiency (Scotland) Bill.

In answer to Major HOPE, Mr. ASQUITH (the Prime Minister) stated that the Mental Deficiency (Scotland) Bill would be sent to the Scottish Grand Committee. He hoped that it might be possible to pass it this session.

Herbalists and Christian Scientists and the National Insurance Act.

Sir J. D. REES asked the Secretary to the Treasury whether any

Insurance Committee had allowed any arrangements under Section 15 (3) of the National Insurance Act with herbalists or Christian Scientists.—Mr. MASTERMAN said in reply: I have no information as to such arrangements, which are dependent on the discretion of the Insurance Committees.

Sir J. D. REES: Would the right honourable gentleman not become aware of the extraordinary fact if any such arrangements were officially sanctioned by an Insurance Committee?—Mr. MASTERMAN: No, the Insurance Committees do not report to me particulars of those insured persons whom they allow to make their own arrangements.

Irish Insured Persons and Medical Benefit.

Major MCCALMONT asked the Secretary to the Treasury what procedure had to be adopted by Irish insured persons who were members of Irish societies and who wished to obtain the medical benefits due to them in return for their increased contributions while temporarily employed in England; to whom must they give notice; and from whom did they receive the necessary instructions.—Mr. MASTERMAN answered: An Irish insured person coming to England should apply to the clerk of the Insurance Committee of the area to which he comes, who will give him the necessary instructions.

Major MCCALMONT: How can an Irish insured person find out the local insurance area he may be in? To whom is the application to be made?—Mr. MASTERMAN: He can always obtain the information from his approved society. Generally I should think an application addressed to the municipal offices of the borough or county to which he has moved would secure it.

Major MCCALMONT: On the assumption that the insured person is taken suddenly ill, is there any means by which he can obtain medical benefit?—Mr. MASTERMAN: The insured person should give notice on arrival in this country so as to be insured for medical benefit. He would have to pay an extra amount, as he would not have been paying for medical benefit in Ireland.

Artificial Colouring in Milk.

Mr. CHARLES BATHURST asked the Parliamentary Secretary to the Local Government Board whether, in view of the fact that all or very nearly all the milk sold in London was artificially coloured by annatto to look like the milk of Jersey cows, and that thereby a false standard of quality was set up and London consumers deceived thereby, he would issue an order from his department prohibiting the dyeing of milk and thus enable householders to judge of the quality of the milk by its appearance as it left the cow.—Mr. H. LEWIS answered: Under the existing law the Local Government Board are not empowered to take action with regard to the process of colouring milk referred to in the question. This is one of the matters in respect of which my right honourable friend proposes to take power to make regulations under the Milk and Dairies Bill.

National Insurance Act and Medical Practices.

Mr. CHIOZZA MONEY asked the Secretary to the Treasury whether he had observed that advertisements were now appearing pointing out the enhanced value of medical practices through the operation of the National Insurance Act; and whether he had been able to form any estimate of the total increase in the actual value of medical practices owing to the Act.—Mr. MASTERMAN (in a written answer) replied: My attention has been called to such advertisements, but I have no means of providing any estimate of the total increase in the value of medical practices.

Medical Panel Contracts.

In reply to Mr. O'GRADY, Mr. MASTERMAN wrote: The arrangements made for medical benefit at the beginning of the year were only provisional in the sense that the doctors' and chemists' agreements with the Insurance Committees were made for a period of three months only. That period expired on April 14th, and the agreements have now been renewed throughout the country.

Independent Arrangements with Panel Practitioners.

Mr. MACCALLUM SCOTT asked the Secretary to the Treasury whether any Insurance Committees had made it a condition of granting leave to any insured persons to make their own arrangements for medical benefit that the applicant should not make arrangements with any doctor who was on the panel; and whether he would state under what section of the National Insurance Act Insurance Committees had power to impose such a condition.—Mr. MASTERMAN furnished the following written answer: I understand that in some cases insured persons have been refused permission by a Local Insurance Committee to make their own arrangements under Section 15 (3) with doctors on the panel. It is the duty of the Insurance Committees to exercise their discretion in dealing with applications of this nature, and it would certainly be within their powers to refuse to allow an insured person to make his own arrangements with a doctor on the panel if it appears to them either that the insured person in question should not derive any advantage therefrom or that the interests of other insured persons in the area would suffer.

MONDAY, APRIL 28TH.

The Site of Westminster Hospital.

Sir HENRY CRAIK asked the honourable Member for St. George's-in-the-East, as representing the First Commissioner of Works, whether the Government, in the event of the transfer of Westminster Hospital and the sale of the site, was prepared to enter into negotiations for its purchase on fair terms, for which the present restrictions on the use of the site afford opportunity, so that provision might be made in the public interest, for such rearrangement of the frontage as might provide an adequate thoroughfare to Parliament-square from the west.—Mr. WEDGWOOD BENN replied: After full consideration His Majesty's Government have decided to take no steps for the acquisition of the site in question.

Panel Patients at West Hougham, Kent.

Replying to Mr. RONALD MCNEILL, Mr. MASTERMAN said: Although there is no practising doctor actually resident in the village of West Hougham, arrangements have been made whereby every insured person in the village can be placed upon the list of a doctor who has expressed his willingness to treat them, and public notices to this effect have been posted up in the village.

Panel Service in Leicestershire Parishes.

Mr. CAUTLEY asked the Secretary to the Treasury (1) whether he was aware that in the parishes of Woodhouse Eaves and Woodhouse, in Leicestershire, the Leicestershire Health Insurance Committee, after inviting the former medical officer for these parishes and another local doctor to go on to the panel, had imported a doctor from outside, Dr. Cullen; that about 200 insured persons in these parishes had had their cards signed by the former medical officer and desired to be attended by him, whom they knew and in whom they had confidence; that, notwithstanding this doctor was ready and willing to attend them, they had been informed by the Insurance Committee they must go to Dr. Cullen for medical treatment under the National Insurance Act; and if they went to the former medical officer they must do so at their own expense; and that the money provided under the National Insurance Act for medical treatment would be paid to Dr. Cullen whether he attended them or not; and whether he would take steps to insure to these 200 insured persons the free choice of doctor which was promised to them; and (2) whether he would state the terms upon which the Leicestershire Health Insurance Committee had imported a doctor from outside to attend persons insured under the National Insurance Act in the parishes of Woodhouse Eaves and Woodhouse; whether there were any, and what, limitations as to the practice he might undertake, and if it was possible for him to attend any insured persons and other persons in the county of Leicestershire, and to set up surgeries in any part of the county; and whether at the same time the money payable under the National Insurance Act for the medical treatment of the insured persons residing in these two parishes had been assured to him by the Insurance Committee, whether he attended these persons or not.—Mr. MASTERMAN answered: As the Leicestershire Insurance Committee were unable to secure an adequate medical service in the parishes referred to, they were authorised by the Commissioners under the proviso to Section 15 (2) of the National Insurance Act to dispense with the panel system and to make a special arrangement whereby Dr. Cullen undertook to attend and treat all the insured persons in those parishes on condition that he was given the exclusive right of practising amongst the insured persons in that area for a period of three years from Jan. 15th last. Dr. Cullen has the right possessed by every other duly qualified medical practitioner of being included on a panel, where the panel system exists. I am informed by the committee that the other doctor referred to in the question did not sign the medical tickets, with the exception of 15, until after the panel system in Woodhouse and Woodhouse Eaves had been dispensed with.

Sanatorium Benefit in Leeds.

Mr. O'GRADY asked the Secretary to the Treasury whether he had received a statement from the Leeds Insurance Committee showing that the estimated income for sanatorium benefits was £9893 15*s.*, and that on the year's working, if the provisions of the National Insurance Act were to be fully carried out, the amount required would be £37,836 17*s.* 6*d.*, showing a deficiency of £27,943 2*s.* 6*d.*; if so, what steps, if any, the Treasury intended taking to meet this case.—Mr. MASTERMAN said in reply: The figures in the estimates of the committee are being carefully considered, and I hope that a conference is to take place on the subject in the next few days, after which it will be easier to see what steps, if any, are needed to supplement the present provision for sanatorium benefits. I may point out, however, that the estimates given in the question are certainly excessive, as they are based on the assumptions that all applicants require institutional treatment, that all applicants admitted to an institution require to stay there throughout the whole of a year, and that the number of beds required in this area would be about seven times the number required on the basis of the recommendations of the Astor report.

TUESDAY, APRIL 29TH.

The Hospital at Glencorse Barracks.

Colonel SEELY (Secretary of State for War) informed Major HOPE that there was a military hospital at Glencorse which was available for all troops in the Scottish Command, and was largely used for cases of venereal disease. The building was detached from the nearest married quarters. There was no other hospital in Scotland so suitable for the special treatment required for these cases.

Sanatorium Benefit.

Mr. MASTERMAN (Secretary to the Treasury) informed Mr. COOPER that a further return would be furnished in a few weeks showing the number of persons who had applied for treatment for tuberculosis.

Excessive Numbers of Panel Patients.

Mr. F. HALL (Dulwich) asked the Secretary to the Treasury whether he was aware that in some districts sufficient medical men had not gone on the panel, seeing that some of them had 5000 or 6000 panel patients each.—Mr. MASTERMAN answered: I think these districts have been under-doctored in the past, and I hope that new medical men will come into them.

The Select Committee on Patent Medicines.

It is understood that the Select Committee on Patent Medicines of the House of Commons will soon complete the hearing of evidence. On Thursday, April 24th, Mr. Harrison, an analyst who gave evidence in the early stages of the inquiry, was recalled to reply to various statements which had been made to the Committee.

WEDNESDAY, APRIL 30TH.

The Working of the National Insurance Act.

Colonel CHALONER called attention to the administration of the Insurance Act. He argued that in many cases insured persons had not got the medical attendance and treatment which were promised to them by Ministers. He moved that every effort should be made to bring the administration into harmony with the speeches of the Chancellor of the Exchequer and other Members of the Government before the Act became law.

Mr. G. LOCKER-LAMPSON, in seconding the motion, said that there had been a breach of faith in regard to medical benefit. The modern methods of diagnosis which had been promised by the Chancellor of the Exchequer had not been insisted on.

Mr. MASTERMAN said that these methods had not been inserted in the Regulations, but were given in cases where they were available.

Mr. LOCKER-LAMPSON further contended that there had been a flagrant breach of faith in regard to the free choice of doctors.

Mr. DAWES said that the statement had been made that certain doctors in London had about 5600 or 6000 insured persons on their lists.

The fact was that in each case the medical men shared the work of attending insured patients with partners. In London 1425 cases were receiving treatment for tuberculosis. There had been remarkably few cases of complaints in regard to the Act in London in relation to the total number of insured persons. There were 1260 medical men now on the London panels. Considering everything the Act was working extremely smoothly.

Mr. MASTERMAN replied to the debate. He denied that the Insurance Commissioners had violated the spirit of the Act in regard to free choice of doctor. It was not the case that the insured persons had been driven into the pen of inferior practitioners. The medical men had renewed their contracts. Their numbers had increased very considerably, and were increasing every day. Practically now there was no case in which any man was deprived of free choice of doctor, except in one town and in three or four villages. In January the number of medical men on the panels was 17,796; on April 14th it was 18,584. He estimated that 80 or 90 per cent. of the doctors engaged in industrial practice had gone on the panels. In a large number of towns and counties in England more than 100 per cent. of the doctors had gone on the panel (laughter). Honourable gentlemen laughed. The explanation was that not only had practically every doctor in the town gone on the panel, but doctors in the immediate neighbourhood, anxious to get into practice in those towns, had also gone on the panel. As to the complaint that some medical men were getting an excessive number of panel patients, he would point out that only in five districts was the average number of insured persons per medical man 1200 and over. That showed that the general distribution of insured persons amongst doctors had been carried out. In the poorer districts there was a great increase and there was going to be a great increase of the numbers of medical men. He hoped that as a result of the warfare with the medical profession, which was almost over, there would be established amicable relations between medical men and the Insurance Committees. The worst thing that could have happened to the profession would have been to have divided it into two parts—panel doctors and non-panel doctors. There was no bitterness in the fight in the Insurance Commission or in the Insurance Committees. They had given every possible opportunity of modification of the Insurance Act so long as the interests of the Approved Societies were preserved. The action of the Chancellor of the Exchequer and the administration of the Insurance Commission and Committees had been more than vindicated. Every promise of his right honourable friend had been fulfilled. The Act was getting more efficient every week, and the insured persons were getting more conscious of the benefit of the Act.

Mr. H. FORSTER drew attention to several defects in administration. The motion was rejected by 270 votes to 77.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.

Practical Guide to Diseases of the Throat, Nose, and Ear. For Senior Students and Junior Practitioners. By William Lamb, M.D., C.M. Edin., M.R.C.P. Lond., Hon. Surgeon, Birmingham Ear and Throat Hospital. Third edition. Price 7s. 6d. net.

CONSTABLE AND CO., LIMITED, London. HOUGHTON MIFFLIN COMPANY, Boston and New York.

A Doctor's Table Talk. By James Gregory Mumford, M.D., Lecturer on Surgery in Harvard University, &c. Price 5s. net.

DANIEL, C. W., LIMITED, 3, Amen-corner, London, E.C. BAKER AND TAYLOR, New York.

The Book without a Name. Chiefly on Naturism, or the Religion of Science. Compiled in Dixieland. By Oran Catellew. Price not stated.

FIFIELD, A. C., 13, Clifford's Inn, London, E.C.

The Peacemaker: A Retrospective Forecast. By W. Winslow Hall, M.D. Price 1s. net.

FISCHER, GUSTAV, Jena.

Lehrbuch der klinischen Diagnostik innerer Krankheiten, mit besonderer Berücksichtigung der Untersuchungsmethoden. Herausgegeben von Prof. Dr. Paul Krause, Direktor der Medizin. Poliklinik in Bonn. Zweite Auflage. Price, paper, M.18; bound, M.20.

Handbuch der pathogenen Mikroorganismen. Herausgegeben von Dr. W. Kolle und Dr. A. von Wassermann. Zweite vermehrte Auflage. Lieferungen. 36–41. Price M.5 each.

FOWLER, L. N., AND CO., 7, Imperial Arcade, Ludgate-circus, London, E.C.

Modern Miracles. Faith and Will-power and the Art of Healing. By J. Wallace-Clarke. Price 1s. net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

Abel's Laboratory Handbook of Bacteriology. Second English Edition. Translated from the Fifteenth German Edition by M. H. Gordon, M.A., M.D. Oxon., B.Sc., Assistant Pathologist to St. Bartholomew's Hospital. With Additions by Dr. A. C. Houston, Dr. T. J. Horder, and the Translator. Price 5s. net.

Tuberculin Treatment. By Clive Riviere, M.D. Lond., F.R.C.P., and Egbert Morland, M.B. & B.Sc. Lond., M.D. Berne. Second edition. Price 6s. net.

Headache, its Varieties, their Nature, Recognition, and Treatment. A Theoretical and Practical Treatise for Students and Practitioners. By Dr. Siegmund Auerbach, Chief of the Polyclinic for Nervous Diseases in Frankfurt a.M. Translated by Ernest Playfair, M.B., M.R.C.P. Price 5s. net.

GIBSON, ROBERT, AND SONS (GLASGOW), LIMITED, 45, Queen-street, Glasgow.

The Medical Practitioner's Desk Companion. (An Account-book.) Price 5s. 6d. net.

HAYEZ, Rue de Louvain, 112, Bruxelles.

La Gro-sesse Extra-Utérine Précoce. Étiologie, Séméiologie, Diagnostic, Traitement. Par le Dr. Lucien Henault, Chef du Service de Gynécologie à l'Hôpital de Saint-Gilles (Bruxelles). Price not stated.

HIRSCHWALD, AUGUST, Berlin.

Die Wirkungen von Arzneimitteln und Giften auf das Auge. Handbuch für die gesamte ärztliche Praxis. Von Dr. L. Lewin, Professor in Berlin, und Dr. H. Guillery, Augenarzt in Cöln. Zweite, vervollständigte Auflage. 2 Bände. Price M.38.

Die Chirurgie der Blutegefässe und des Herzens. Von Dr. Ernst Jeger. Price M.9.

Die Sanitätsausrüstung des Heeres im Kriege. Mit Genehmigung des Königl. Preussischen Kriegsministeriums unter Benutzung amtlicher Quellen. Bearbeitet von Dr. W. Niehues, Oberstabsarzt im Kriegsministerium. Price M.24.

HOEBER, PAUL B., 69, East 59th Street, New York.

Compendium of Diseases of the Skin, based on an Analysis of Thirty Thousand Consecutive Cases. With a Therapeutic Formulary. By L. Duncan Bulkley, A.M., M.D., Physician to the New York Skin and Cancer Hospital. Price $2.00 net.

Diet and Hygiene in Diseases of the Skin. By L. Duncan Bulkley, A.M., M.D., Physician to the New York Skin and Cancer Hospital. Price $2.00 net.

KARGER, S., Berlin.

Die Entstehung der sphärischen Refraktionen des menschlichen Auges. (Uebersichtigkeit—Normalsichtigkeit—Kurzsichtigkeit.) Von Dr. med. Adolf Steiger, Augenarzt in Zürich. Price, paper, M.18; bound, M.20.

Geburtshilfliches Vademekum für Studierende und Aerzte. Von Prof. Dr. A. Dührssen in Berlin. Zehnte, verbesserte und vermehrte Auflage. Price, bound, M.5.60.

Die Störungen des Verdauungsapparates als Ursache und Folge anderer Erkrankungen. Von Dr. Hans Herz in Breslau. Zweite, umgearbeitete und vermehrte Auflage. II. Teil: Die akuten Infektionskrankheiten in ihren Beziehungen zum Verdauungsapparat. Price M.8.

Behandlung der angeborenen und erworbenen Gehirnkrankheiten mit Hilfe des Balkenstiches. Von Prof. Dr. G. Anton, Direktor der Königl. Klinik für Geistes- und Nervenkrankheiten in Halle a.S., und Prof. Dr. F. G. v. Bramann, Direktor der Königl. Chirurg. Universitätsklinik in Halle a.S. Price, paper, M.9; bound, M. 10.60.

Die Gebärmutter des Weibes, ihre normale Arbeit und ihre Zerreissungen während der Geburt. Von Dr. J. Werboff, Assistenzarzt am Kaiserl. klinischen Institut für Geburtshülfe und Gynäkologie in St. Petersburg. Price, paper, M.6; bound, M.7.60.

Ueber den Hospitalismus der Säuglinge. Eine klinische Studie. Von Dr. Ludwig F. Meyer, Privatdozenten an der Universität, erstem Assistenten am Waisenhause der Stadt Berlin. Price M.4.

Verhandlungen des VI. Internationalen Kongresses für Geburtshülfe und Gynäkologie in Berlin vom 9–13 September, 1912. Unter dem allerhöchsten Protektorate Ihrer Majestät der Kaiserin und Königin. Herausgegeben von Ed. Martin, Berlin, Generalsekretär. Price M.28.

KIMPTON, HENRY, London. STENHOUSE, ALEXANDER, Glasgow.

Handbook of Diseases of the Rectum. By Louis Hirschman, M.D., Fellow, American Proctologic Society; Lecturer on Rectal Surgery and Clinical Professor of Proctology, Detroit College of Medicine. Second edition, revised and rewritten. Price 18s. net.

KING, P. S., AND SON, Orchard House, Westminster, London, S.W.

National Life and National Training. By General Sir Ian Hamilton, G.C.B. Price 6d.

LEWIS, H. K., London.

Medical Electricity. A Practical Handbook for Students and Practitioners. By H. Lewis Jones, M.A., M.D., Fellow of the Royal College of Physicians of London, Consulting Medical Officer to the Electrical Department in St. Bartholomew's Hospital. Sixth edition. Price 12s. 6d. net.

MALOINE, A., Paris.

Le Post-Partum Normal. Deuxième Fascicule. Services d'Obstétrique, Hygiène, Principes d'Asepsie. Par le Professeur Constantin Daniel (Bucarest). Price not stated.

MASSON ET CIE, Paris.

Traité Médico-Chirurgical des Maladies de l'Estomac et de l'Œsophage. Par MM. A. Mathieu, L. Sencert, Th. Tuffier, avec la Collaboration de MM. J. Ch. Roux, J. L. Roux-Berger, et P. Moutier. Price Fr.20.

METHUEN AND CO., LIMITED, London.

Maternity Nursing. By Sarah Macdonald, Trained Nurse, Matron of the Salford Maternity Training School and Private Nursing Home. Price 3s. 6d. net.

MICHAEL, W., AND SON, Watford. (For THE SCHOOL DENTISTS' SOCIETY.)

The School Dentists' Society. Affiliated to the Child-Study Society and the National League for Physical Education and Improvement. Its Objects and Aims. Second edition. Price 1s. net.

REBMAN, LIMITED, London.

Diseases of the Mouth, Syphilis and Similar Diseases. For Physicians, Dentists, Medical and Dental Students. By Prof. Dr. F. Zinsser, Director of the Department of Dermatology at the City Hospital, Lindenburg, Cologne. Translated and edited by John Bethune Stein, M.D., Professor of Physiology at the New York College of Dentistry. Price 30s. net.

The Labyrinth. An Aid to the Study of Inflammations of the Internal Ear. By Alfred Braun, M.D., New York; and Isidore Friesner, M.D., New York. Price 17s. 6d. net.

ROUSSET, JULES, 1, Rue Casimir-Delavigne, Paris.

La Cuprase et le Cancer. Cinquante Observations Nouvelles. Price Fr.2.

SAUNDERS (W. B.) COMPANY, London and Philadelphia.

Surgery, its Principles and Practice. By Various Authors. Edited by William Williams Keen, M.D., LL.D., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Vol. VI. Price, cloth, 30s net.

SCHOLASTIC, CLERICAL AND MEDICAL ASSOCIATION, LIMITED, 22 Craven-street, Trafalgar-square, London, W.C.

Medical Partnerships, Transfers, and Assistantships. (New edition, revised and amplified.) By William Barnard, M.A., LL.B., of the Inner Temple, Barrister-at-Law; and G. Bertram Stocker, King's College, Cambridge, Managing Director of the Scholastic, Clerical and Medical Association (Limited). Price 10s. 6d. net.

THACKER, SPINK, AND CO., Calcutta.

The Indian Manual of First Aid. By Major R. J. Blackham, D.P.H. Lond., R.A.M.C. Price Re.1.

UNIVERSITY PRESS, Manchester.

The Distinction between Mind and its Objects. The Adamson Lecture for 1913. With an Appendix. By Bernard Bosanquet, M.A., LL.D., D.C.L., F.B.A. Price, paper, 1s. net; cloth, 1s. 6d. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

CHALLENOR, L. T., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon at the Royal Infirmary, Leicester.

COX, ARTHUR NEVILLE, M.B., B.S. Lond., has been appointed Tuberculosis Officer for Brighton.

DICKIE, DAVID, M.B. Glasg., F.R.C.S. Edin., has been appointed Lecturer in Surgery in the Western Medical School, Glasgow.

DOBSON, J. R. B., M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Tuberculosis Officer to the County of Middlesex.

HIBBERT, J. COOTE, M.D. Lond., has been appointed Medical Officer of Health of Blackburn.

HOPKINS, H. L., M.B., B.S. Lond., has been appointed Assistant County Medical Officer of Suffolk (West).

THACKER, W. S., M.D. Dub., F.R.C.S. Edin., has been appointed House Surgeon at the Royal Infirmary, Leicester.

WILLETT, HAYWARD, M.D. Liverp., M.B., Ch.B. Vict., has been appointed Honorary Surgeon to the Hospital for Women, Liverpool.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Second House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board and laundry.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Third House Surgeon. Salary £75 per annum, with board, rooms, &c.

BIRMINGHAM, QUEEN'S HOSPITAL.—Honorary Surgeon.

BRADFORD EDUCATION COMMITTEE.—Two Assistants (male and female) to the School Medical Officer. Salary £350 per annum each. Also School Dentist. Salary £300 per annum.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

BRISTOL, COSSHAM MEMORIAL HOSPITAL, Kingswood.—House Surgeon. Salary £50 per annum, with board, lodging, and washing.

BRISTOL GENERAL HOSPITAL.—First House Physician, Second House Physician, and Casualty House Surgeon, all for six months. Salary £80 per annum, with board, residence, &c.

BRISTOL, NORDRACH-UPON-MENDIP SANATORIUM, Blagdon.—Assistant Medical Officer. Salary £150 and all found.

BRISTOL ROYAL INFIRMARY.—Obstetric and Ophthalmic House Surgeon for six months. Salary at rate of £75 per annum, with board, laundry, and apartments. Also Resident Casualty Officer for six months. Salary at rate of £50 per annum, with board, apartments, and laundry.

BROMSGROVE, WORCESTERSHIRE ASYLUM.—Second Assistant Medical Officer. Salary £200 per annum, with quarters, board, washing, and attendance.

BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and laundry.

BUXTON, DEVONSHIRE HOSPITAL, Derbyshire.—Assistant House Physician for six months. Salary £100 per annum, with apartments, board, and laundry.

CANTERBURY BOROUGH ASYLUM.—Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, washing, and attendance.

CARDIFF, KING EDWARD VII.'S HOSPITAL.—Two Honorary Physicians.

CARDIFF, KING EDWARD VII. WELSH NATIONAL MEMORIAL ASSOCIATION.—Medical Officer to the Tuberculosis Hospital. Salary £200 per annum, with board, lodging, &c.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—House Physician. Salary £90 per annum, with board, apartments, and laundry.

COUNTY BOROUGH OF WEST HAM.—Assistant School Medical Officer. Salary £250 per annum.

DENBIGH, NORTH WALES COUNTIES ASYLUM.—Medical Superintendent. Salary £500 per annum, with house.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician. Salary at rate of £100 per annum, with apartments, board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £50 for first six months, £75 for second. Also Assistant House Surgeon, unmarried. Salary at rate of £75 per annum, with board and laundry.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £55 per annum, with board and washing.

DUNDEE ROYAL INFIRMARY.—Resident Medical Officer.

EDMONTON UNION INFIRMARY, 77, Bridport-road, Upper Edmonton.—Second Assistant Medical Officer, unmarried. Salary £120 per annum, with residential allowances.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Physician and Assistant Casualty Officer for six months. Salary at rate of £75 per annum, with board, residence, and laundry.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, apartments, and washing.

FARRINGDON GENERAL DISPENSARY AND LYING-IN CHARITY, 17, Bartlett's-buildings, Holborn Circus, E.C.—Honorary Ophthalmic Surgeon and Honorary Gynæcologist. Also Resident Medical Officer. Salary £100 per annum, with rooms, attendance, fire, and lighting.

GLASGOW, STOBHILL GENERAL HOSPITAL.—Medical Officer. Salary £120 per annum, with board and lodging.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, London, N.—House Physician for six months. Salary at rate of £40 per annum, with board, lodging, and laundry.

GREENWICH UNION.—Junior Assistant Medical Officer. Salary £100 per annum, with apartments, rations, and washing.

GUY'S HOSPITAL DENTAL SCHOOL.—Radiographer. Salary £50 per annum.

HALIFAX, COUNTY BOROUGH OF.—Clinical Tuberculosis Officer. Salary £400 per annum, with house, &c.

HALIFAX, ROYAL HALIFAX INFIRMARY.—Third House Surgeon, unmarried. Salary £80 per annum, with residence, board, and washing.

HASTINGS, EAST SUSSEX HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with residence, board, and washing. Also Assistant House Surgeon. Salary at rate of £70 per annum, with residence, board, and washing.

IPSWICH, EAST SUFFOLK HOSPITAL.—House Physician. Salary £80 per annum, with board, residence, and laundry.

ITALIAN HOSPITAL, Queen-square, W.C.—Honorary Anæsthetist.

LANCASTER, COUNTY ASYLUM.—Assistant Medical Officer. Salary £150 per annum, with board, apartments, washing, and attendance.

LEAMINGTON SPA, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL AND MIDLAND COUNTIES BATHING INSTITUTION.—House Physician. Salary £85 per annum, with board, residence, and laundry.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100 per annum, with board and residence.

LEICESTER ROYAL INFIRMARY.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, apartments, and washing.

LINCOLN MENTAL HOSPITAL, The Lawn, Lincoln.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, &c.

LIVERPOOL EYE AND EAR INFIRMARY, Myrtle-street.—House Surgeon. Salary £80 per annum.

LIVERPOOL, PARK HILL SANATORIUM.—Resident Medical Superintendent, unmarried. Salary at rate of £350 per annum, with board, residence, and washing.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY.—Resident House Surgeon. Salary £120 per annum, with rooms, attendance, board, and washing.

MANCHESTER, ANCOATS HOSPITAL.—Assistant House Surgeon. Salary £70 per annum. Also House Physician. Salary £80 per annum. Also Honorary Dental Surgeon.

MANCHESTER CHILDREN'S HOSPITAL (Out-patients' Department), Gartside-street.—Assistant Medical Officer for six months. Salary £25.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

MIDDLESEX HOSPITAL, W.—Second Assistant to Director of Clinical and Bacteriological Laboratories. Salary £100 per annum.

MONTREAL, McGILL UNIVERSITY.—Robert Reford Chair of Anatomy.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £180, with apartments, attendance, light, and fuel.

NOTTINGHAM GENERAL HOSPITAL.—Locum Tenens for 14 weeks. Salary £3 3s. per week, with board, residence, and laundry.

OXFORD, RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—House Physician, unmarried, for six months. Salary at rate of £80 per annum, with board, &c.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Honorary Surgeon to Eye Department.

POPLAR BOROUGH DISPENSARY FOR THE PREVENTION OF CONSUMPTION, Alexandra House, 135, Bow-road, E.—Assistant Tuberculosis Officer. Salary £300 per annum.

PRESTON, COUNTY ASYLUM, Whittingham.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—Second House Surgeon for six months. Salary £80 per annum, with apartments, board, and washing.

ROCHDALE INFIRMARY.—Second House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.

ROTHERHAM HOSPITAL AND DISPENSARY.—Assistant House Surgeon. Salary £80 per annum, with board, lodging, and washing.

ROYAL EAR HOSPITAL, Soho.—House Surgeon. Salary £40 per annum.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Clinical Assistants in the Out-patients' Department.

ST. BARTHOLOMEW'S HOSPITAL.—Assistant Surgeon.

ST. GILES AND BLOOMSBURY INFIRMARY, Cleveland-street, Fitzroy-square, W.—Assistant Medical Officer and Dispenser. Salary £130 per annum, with board, lodging, washing, attendance, &c.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £75 per annum, with board, lodging, and washing.

ST. PAUL'S HOSPITAL FOR SKIN AND GENITO-URINARY DISEASES, Red Lion-square, Holborn.—Honorary Assistant Surgeon. Also Clinical Assistant.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Senior House Surgeon. Salary £100 per annum, with residence, board, &c.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £60 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—Assistant House Surgeon, unmarried. Salary £70 per annum, with board and residence.

SHOREDITCH INFIRMARY AND WORKHOUSE, Hoxton-street, N.—Medical Superintendent. Salary £500 per annum, with apartments, light, fire, and washing.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon for six months. Salary at rate of £80 per annum, with rooms, board, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £90 per annum, with residence, board, and washing.

SOUTHWARK UNION INFIRMARY, East Dulwich Grove, S.E.—Two Assistant Medical Officers. Salary £120 per annum each, with board, lodging, and washing.

SURREY COUNTY COUNCIL.—Two Tuberculosis Medical Officers. Salaries £500 per annum each.

SWANSEA GENERAL AND EYE HOSPITAL.—House Surgeon. Salary £75 per annum, with board, washing, and attendance.

TAUNTON, SOMERSET AND BATH ASYLUM, Cotford—Assistant Medical Officer, unmarried. Salary £180 per annum, with apartments, board, washing, attendance, &c.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with rooms, board, and washing.

WARRINGTON, LANCASHIRE COUNTY ASYLUM, Winwick.—Locum Tenens Medical Officer, unmarried, for five months. Salary 4 guineas per week, with apartments, board, attendance, and washing.

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Resident House Physician for six months. Salary at rate of £50 per annum.

WEST HAM AND EASTERN GENERAL HOSPITAL.—Junior House Physician. Salary at rate of £75 per annum, with board, residence, and washing.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Physician.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—House Surgeon. Salary £80 per annum.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Resident Medical Officer. Salary at rate of £100 per annum, with board, rooms, and laundry.

WORCESTER GENERAL INFIRMARY.—House Physician. Salary £100 per annum, with board, residence, and washing.

YORK DISPENSARY AND MATERNITY HOSPITAL.—Resident Medical Officer, unmarried. Salary £140 per annum, with board, lodging and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Gortin, in the county of Tyrone.

Births, Marriages, and Deaths.

BIRTHS.

CRAWFORD.—On April 23th, at Kilmeny, Keighley, Yorks, to Dr. and Mrs. John C. Crawford, a daughter.

EYRE.—On April 29th, 1913, at The Warren, Tulse Hill, S.W., to Dr. and Mrs. John Eyre, a daughter.

LEEMING.—On April 22nd, at The Friars, Sudbury, Suffolk, to Dr. and Mrs. Leeming, a son.

MAYO.—On April 26th, at Clifton House, Cowes, the wife of Dr. T. A. Mayo, of a daughter.

POULTON.—On April 20th, at Belmont Park, Lee, Kent, the wife of E. P. Poulton, M.B., B.Ch. Oxon., M.R.C.P., of a son.

WARREN.—On April 29th, at 7, Devonshire Mansions, Great Portland-street, W., the wife of Richard Warren, M.Ch. Oxon., F.R.C.S., of a son.

MARRIAGES.

HOMAN—BURNS.—On April 23rd, at St. John's Church, Chester, St. G. M. L. Homan, M.B., B.Ch., to Agnes Maxwell, second daughter of the late J. B. Burns, of Rugeley.

LEA—MCTAGGART.—On April 14th, at St. Peter's Church, Cranley-gardens, South Kensington, London, S.W., Dr. Arnold William Warrington Lea, of Manchester, to Lillias Thompson, daughter of the late Captain William McTaggart, of Whithorn, Wigtonshire, N.B.

LEDINGHAM—FOWLER.—On April 22nd, at St. Giles's Cathedral, Edinburgh, John Charles Grant Ledingham, D.Sc., M.B., M.A., to Barbara, only daughter of Mr. David Fowler.

MONTGOMERY—MUIRHEAD.—On April 26th, at Edinburgh, by the Rev. Alexander Fiddes, B.D., William M. Montgomery, M.B., C.M., D.P.H., Messina, Transvaal, South Africa, to Winifred Muirhead, L.R.C.P., L.R.C.S. Edin., daughter of the late Charles Muirhead, Edinburgh.

RENSHAW—STRAGHAN.—On April 24th, at St. Stephen's, Dulwich, Captain John Allister Renshaw, R.A.M.C., to Rachel Eleanor Mary (Eileen), youngest daughter of Colonel A. Straghan, C.B.

STURGE—CROYSDALE.—On April 23rd, at St. Mary's Church, Sunbury-on-Thames, W. Howard Sturge, M.D., to Dorothy, second daughter of Mr. T. Croysdale, J.P.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

PUBLIC HEALTH AT KINGSTON, JAMAICA, IN 1911.

THE capital of Jamaica had a population in 1911 of 57,379, with a birth-rate of 36·28 and a death-rate of 29·47 per 1000; the latter was lower than in any year since 1907, when the occurrence of an earthquake was followed by a considerable increase in mortality. Year by year since then (except in 1910) there has been a progressive reduction. During the year under review there was no outbreak of any serious disease, though the endemic of typhoid fever that started after the earthquake in 1907 still continued; there were 190 cases, of which 147 were resident in Kingston. No decided opinion appears to have been arrived at as to its causation, except a suggestion as to "the enormous importance of the personal over any other factor in the spread of the disease." Allusion is also made to a connexion between a foul privy system and enteric incidence, and to possible spread through the mediation of flies. The three preventive measures required are extension of the sewerage system, improvement in domestic sanitation, and control of typhoid cases and carriers. Malaria has been much less prevalent and severe than in any recent year, largely on account of the energetic antimosquito measures adopted. All known breeding-grounds are regularly treated, and it is hoped that in a year or two all possible breeding-grounds will be abolished. Not a single case of yellow fever has been reported. Stegomyia fasciata is to be found in about 4 per cent. of the rooms and yards visited, but is becoming scarcer year by year. There has been no plague, but rat destruction is carried out by means of virus, and in view of the approaching opening of the Panama Canal vigilance will be required. Tuberculosis has caused a mortality of 2·8 per 1000; this is a lower rate than in any year since that of the earthquake (1907), when there was a sudden and considerable increase of deaths from this cause. Pulmonary tuberculosis is now a compulsorily notifiable disease in Kingston, and though no special means of isolation have been available, much good work has been done in the way of disinfection and by informing public opinion generally as to preventive measures. As the medical officer of health, Dr. Angus Macdonald, says in his introductory letter, there is nothing extraordinary to be related in the public health affairs of Kingston during the year; but this absence of any particular matter requiring comment is itself a matter for congratulation, as indicating the efficacy of the preventive measures that have been carried out.

RESULTS OF VACCINATION IN THE PHILIPPINE ISLANDS.

THE report of the Director of Health, Dr. Victor G. Heiser, for the last quarter of 1912 shows clearly the value of vaccination as a preventive of small-pox. The Philippines, and particularly Manila, had continuously been endemically subject to small-pox in an excessive degree until the United States undertook the task of wholesale vaccination on its occupation of the islands. The first result was a complete stamping out of an epidemic in Manila. The extension of wholesale vaccination to the Archipelago was, of course, a much larger matter, but from the present report we learn that encouraging progress has been made, and that "there have been fewer cases of small-pox in the Philippines than at any time for which records are available." Moreover, "the control of this disease which was achieved in the more settled sections of the Philippines has been maintained, and in Manila, for instance, there has not been a single death from small-pox since June 15th, 1909."

THE BAHREIN ISLANDS.

REPORTING on these islands, the largest group in the Persian Gulf, under the protectorate of the Indian Government, Captain D. L. R. Lorimer, Political Agent, states that almost the entire population, estimated at 100,000, is Mahommedan, and the immense majority of the people are Arabs. In Manama, the capital, however, there is a strong contingent of foreign non-Arabs, these consisting of two or three Europeans, a few American missionaries, a few score Hindus, a large body of Persians, and some Jews. The climate of Bahrein, the largest of the group of islands, is extremely damp at all seasons, and is undoubtedly unhealthy. The extremes of heat and cold are not excessive, but the extreme moisture makes even moderate heat disagreeable. There is a great deal of very strong north-west wind, varied in the later hot weather by spells with a south-east wind or no wind, when the damp is so great that the dry and wet bulb thermometers show as little as 2° difference at a temperature of between 95° and 100° F. Hot weather conditions prevail from the beginning of May well on into October. The *barah*, or 40 days' *shamal*, which is expected in June and July, often makes the climate at that time comfortably cool and pleasant. The rainfall is light, but has been showing a tendency to increase in recent years. The average in the ten years 1902-11 was 2·669 inches, whilst in

1911-12 it was 6·21 inches. In autumn, and sometimes in spring, there is a good deal of fever. Rheumatic afflictions are very general. Since 1905 Bahrein has been visited every second year by plague. The epidemic of 1911 was the severest yet on record. The death roll in the capital and the neighbouring villages was estimated at about 2000. Cholera also occasionally visits the islands. There are no places of public entertainment suitable for Europeans, and houses or quarters are difficult to obtain and expensive. Trained servants are unobtainable, and the raw material is difficult to find. Beyond meat, fat, rice, sugar, salt, and potatoes, food supplies usually have to be imported.

Bertram.—The fact that this swelling in the temporal region is of bony hardness and that it has existed for four or five years makes it practically certain that it is an exostosis, probably of the ivory variety. It has nothing to do with a gouty diathesis, and supposing that the diagnosis is correct no medicinal treatment will be of any use. The growth can only be removed by operation, and this is sometimes a little difficult on account of the hardness of the tumour.

L. Richardson.—Our correspondent has been misinformed. The operation is irrevocable.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Mr. A. D. Waller: The Various Inclinations of the Electrical Axis of the Human Heart.—Surgeon-General Sir D. Bruce, Major D. Harvey, Major A. E. Hamerton, and Lady Bruce: Trypanosome Diseases of Domestic Animals in Nyasaland—III., Trypanosoma Pecorum.—Mr. T. Goodey: The Excystation of Culpoda Cucullis from its Resting Cysts and the Nature and Properties of the Cyst Membranes (communicated by Dr. A. D. Hall).—Mr. C. Shearer, Mr. W. De Morgan, and Mr. H. M. Fuchs: On the Experimental Hybridisation of Echnoids (communicated by Prof. J. S. Gardiner).—Dr. S. Russ and Dr. Helen Chambers: On the Action of Radium Rays upon the Cells of Jensen's Rat Sarcoma (communicated by Mr. H. G. Plimmer).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY.

SPECIAL MEETING OF FELLOWS OF THE SOCIETY: at 5 P.M.

Discussion:

On Alimentary Toxæmia: its Sources, Consequences, and Treatment. (Fifth Meeting.)

The discussion will be re-opened by Professor H. J. Hutchens, and continued by Sir James Goodhart, Mr. W. Lang, Dr. David Somerville, Dr. A. C. Jordan, Mr. Ernest Clarke, Dr. F. Langmead, Dr. J. M. H. MacLeod, Dr. E. von Ofenheim, Mr. Macleod Yearsley, Mr. S. H. Browning.

The Final Meeting will be held on Wednesday, May 7th.

TUESDAY.

SECTION OF SURGERY (Hon. Secretaries—James Berry, J. Murray): at 5.30 P.M.

Annual Meeting.—Election of Officers and Council for Session 1913-1914.

Mr. J. Hutchinson: The Symptoms produced by Aberrant Renal Arteries, and a Clinical Study of the Indications and Results of Operation.

Mr. H. S. Pendlebury: Two Cases of Excision of Spleen.

Mr. F. Kidd: Two Cases of Splenectomy—(1) For Banti's Disease; (2) For Enlarged Spleen, ? Cause.

Mr. J. Hutchinson: Case of Splenic Anæmia after Operation.

WEDNESDAY.

SPECIAL MEETING OF FELLOWS OF THE SOCIETY: at 5 P.M.

Discussion:

On Alimentary Toxæmia: its Sources, Consequences, and Treatment. (Sixth and Final Meeting.)

The discussion will be re-opened by Dr. H. D. Rolleston, and continued by Dr. Douglas Wilson, Dr. F. W. Brook, Dr. W. Armstrong, Dr. W. K. Sibley, Dr. H. D. McCull 2h, Dr. J. C. Briscoe, Dr. Robert Bell, Dr. Ralph Vincent, the President (Sir Francis Champneys, Bt.), and Dr. W. Hale White (Summary and Reply).

SECTION OF OPHTHALMOLOGY (Hon. Secretaries—J. Herbert Parsons, Leslie Paton): at 8.30 P.M.

Clinical Evening.

Demonstration of Cases:

Mr. G. H. Pooley: (1) Angioma of Retina; (2) Giant-celled Sarcoma.

Mr. Sydney Stephenson: Ocular Torticollis.

Mr. Edgar Chatterton: Tubercular Iritis.

Mr. H. Herbert: Third Nerve Paralysis with Rhythmic Clonic Spasm.

Mr. J. Herbert Fisher: Case of Arterio-venous Communication in the Cavernous Sinus Successfully Treated by Ligature of the Common Carotid.

Mr. Ernest Clarke: An Unusual Arrangement of Opaque Nerve Fibres.

Mr. N. Bishop Harman: (1) Exenteration of the Orbit and Excision of Part of the Maxilla and Ethmoid for Rodent Ulcer; (2) Extreme Hyperphoria Cured by Adjustment of Muscles by Subconjunctival Reefing.

Mr. Frank Moxon: Retinitis Punctata Albescens.

Mr. R. R. Cruise: Trephining Combined with Insertion of Thread in Glaucoma.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY.—8 P.M., Dr. D. Sommerville: Antiseptics and Disinfectants:—III., Efficiency of Chemical Bodies used as Antiseptics and Disinfectants—Methods of Determining such Efficiency. (Cantor Lecture.)

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., Paper:—Dr. Hernaman-Johnson (Darlington): Theory and Practice in Ray Therapeutics.—Dr. Hampson: Demonstration of a New X Ray Couch.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. J. Galloway: Clinique (Skin). 5.15 P.M., Lecture:—Mr. C. S. Wallace: Some Conditions Simulating Prostatic Hypertrophy.

TUESDAY.—4 P.M., Dr. J. Taylor: Clinique (Medical). 5.15 P.M., Lecture:—Dr. R. Miller: The Scope of Salicylates in the Treatment of Rheumatism.

WEDNESDAY.—4 P.M., Mr. J. Berry: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. J. C. McClure: The Cardiac Symptoms associated with Dyspepsia.

THURSDAY.—4 P.M., Dr. S. A. K. Wilson: Clinique (Medical). 5.15 P.M., Lecture:—Dr. W. Wingrave: Bacteruria and Pyuria.

FRIDAY.—4 P.M., Dr. G. C. Cathcart: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Diseases of the Eye.

TUESDAY.—10 A.M., Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Diseases of the Throat, Nose, and Ear. 2.30 P.M., Diseases of the Skin.

WEDNESDAY.—10 A.M., Diseases of Children. Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Diseases of the Eye. Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. Orthopædics. 2.30 P.M., Diseases of the Eye.

FRIDAY.—10 A.M., Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Diseases of the Throat, Nose, and Ear. 2.30 P.M., Diseases of the Skin.

SATURDAY.—10 A.M., Diseases of Children. Operations of the Throat, Nose, and Ear. Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Ear and Throat.

TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine. 4.30 P.M., Special Lecture:—Mr. M. Robson, C.V.O.: The Relationship of Pancreatic Catarrh to Catarrhal Jaundice.

WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. Dr. A. Davies: Pathological Demonstration. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery. 3.15 P.M., Special Lecture:—Mr. L. V. Cargill: The Determination of Visual Acuity, Diagnosis of Refraction Errors, and Detection of Malingering.

THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. 3.15 P.M., Dr. R. Wells: Medicine.

FRIDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford: Medicine. 3.15 P.M., Mr. L. McGavin: Surgery. 3.15 P.M., Special Lecture:—Mr. L. McGavin: The Appendix and the Practical Side of its Surgery.

SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—10 A.M., Radiography.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY AND FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. J. Collier Treatment of Neurasthenia.

QUEEN'S HOSPITAL FOR CHILDREN, Board Room of the Hospital, Hackney-road, N.E.

WEDNESDAY.—4 P.M., Dr. J. L. Bunch: Demonstration of Skin Cases.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THUSDAY.—6 P.M., Dr. K. Sibley: Electrical Treatments in Skin Diseases.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street Piccadilly, W.

MONDAY.—5 P.M., General Meeting.
TUESDAY.—3 P.M., Prof. W. Stirling: Recent Physiological Inquiries—(2) Equilibrium and the Sixth Sense.
FRIDAY.—9 P.M., Mr. F. B. Browne: Life History of a Water Beetle.

ANCOATS HOSPITAL, Manchester.

THURSDAY.—4.15 P.M., Mr. W. R. Douglas: Chronic Joint Disease—Diagnosis and Treatment. (Post-Graduate Clinic.)

ROTUNDA HOSPITAL POST-GRADUATE COURSES, Dublin.

MONDAY.—10 A.M., Obstetrical Lecture: The Inductio of Labour. 11 A.M., Examination of Patients and Minor Operations.
TUESDAY.—10 A.M., Major Operations. 4 P.M., Class in Gynæcological Diagnosis.
WEDNESDAY.—10 A.M., Obstetrical Lecture: The Use of the Forceps in Contracted Pelvis. 11 A.M., Examination of Patients and Minor Operations.
THURSDAY.—10 A.M., Major Operations.
FRIDAY.—10 A.M., Gynæcological Lecture: Pelvic Infection (continued). 11 A.M., Examination of Patients and Minor Operations. 4 P.M., Class in Gynæcological Diagnosis.

For further particulars of the above Lectures, &c., see Advertisement Pages.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced:—

April 26th–Nov. 5th (Ghent).—International Exhibition.
May 5th–8th (London, Caxton Hall).—Parents' National Educational Union, Seventeenth Annual Conference.
,, 5th–8th (Paris).—Congress of the French Ophthalmological Society.
,, 6th–8th (Washington).—Tenth Annual Meeting of the American Society of Tropical Medicine.
,, 14th–17th (Halle a-S.)—Fifteenth Meeting of the German Gynæcological Society.
,, 15th–18th (Paris).—Twenty-first Annual Congress of the Royal Institute of Public Health.
May–October (Leipzig).—First International Building Exhibition.
,, ,, (London, Crystal Palace).—Anglo-German Exhibition.
June 16th and 17th (Minneapolis).—Fifteenth Annual Meeting of the American Proctologic Society.
,, 17th–20th (Minneapolis).—American Medical Association.
,, 24th–27th (London, Ontario).—Canadian Medical Association.
,, 30th and July 1st (London, Guildhall).—Conference on Diet, Cookery, and Hygiene in Elementary Schools and Institutions.
July 7th–12th (Exeter).—Twenty-eighth Congress of the Royal Sanitary Institute.
,, 16th–18th (Oxford, Keble College).—Oxford Ophthalmological Congress.
,, 21st–24th (London).—British Pharmaceutical Conference.
,, 22nd–25th (Brighton).—Eighty-first Annual Meeting of the British Medical Association.
Aug. 1st–3rd (Ghent).—Congress against the Adulteration and Deterioration of Foodstuffs.
,, 1st–5th (Brussels).—Third International Conference on Cancer.
,, 4th and 5th (London, Caxton Hall).—English-speaking Conference on Infant Mortality.
,, 6th–12th.—(London).—Seventeenth International Congress of Medicine.
,, 20th–26th (Ghent).—Third International Congress of Neurology and Psychiatry.
,, 25th–30th (Buffalo).—Fourth International Congress of School Hygiene.

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IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 30th, 1913.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 24	29·78	S.E.	...	105	68	46	47	48	Fine
,, 25	29·54	S.W.	0·05	107	59	48	50	50	Cloudy
,, 26	29·60	S.W.	0·15	95	55	42	46	49	Cloudy
,, 27	29·47	S.W.	...	109	62	49	52	54	Cloudy
,, 28	29·77	S.W.	0·06	85	63	49	54	56	Overcast
,, 29	30·07	S.	0·09	110	67	49	52	54	Cloudy
,, 30	29·83	W.	0·41	89	58	52	50	53	Cloudy

The following journals, magazines, &c., have been received:—Journal d'Urologie, Médicale et Chirurgicale, Revue d'Hygiène, Archiv für Experimentelle Pathologie und Pharmakologie, Indian Ambulance Gazette, Transvaal Medical Journal, British Review, Schmidt's Jahrbücher, Journal of Physiology, Journal of Obstetrics and Gynæcology of the British Empire, Vita Sanitaria, Journal of Nervous and Mental Disease, Post-Graduate, Archives of Internal Medicine, Homœopathic Recorder, Qui Sait, Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris.

Communications, Letters, &c., have been received from—

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